THE EFFECTS OF DEVELOPMENT AID AS RENTS ON VIOLENCE

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ABSTRACT

This study examines the extent to which development aid encourages or suppresses violence, using the Nepalese Civil War (2000-2006) as a case study. The effect of aid is analyzed at an aggregate level, by sector, and by concentration levels using rich geo-coded data at the district level. Findings indicate that at the aggregated level, development aid has an insignificant effect on violence; while certain sectors and concentration levels of development aid significantly can encourage or reduce violence. Aid is regarded in the literature to act as a suppressor of conflict if it increases the opportunity cost to rebel and an encourager of conflict or as a rent which fuels rebel initiatives. This study indicates that development aid can effectively increase the opportunity cost to rebel, but can be seen as a rent or is perhaps poorly executed if aid is spent in the education or energy sector or is distributed at a low level of funding per capita.

BIOGRAPHICAL SKETCH

E. Jade Womack grew up in Washington D.C. and rural West Virginia. In May 2015, she received her bachelor's in Applied Economics and Management with a focus in International Trade and Development from Virginia Tech with a magna cum laude and in-Honors distinction. At Virginia Tech she tutored refugees, presented research at over 10 conferences, interned at the United Nations, and worked at the school library. Soon after leaving Blacksburg she started her graduate studies at Cornell University, also in Applied Economics and Management with a focus in International and Development Economics. While at Cornell she interned for CARE-USA in Haiti, did other fieldwork in Guinea, wrote op-eds for her hometown newspaper, and drafted resolutions as part of the Student Advocacy Committee of the Graduate and Professional Student Association.

This document is dedicated to my mother Susana Womack and my grandmother Mildred Louise Womack (1929-2016).

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TABLE OF CONTENTS

Biographical Sketch iii
Dedication iv
Acknowledgements v
Table of Contents vi

1 Introduction **2**

2 Literature Review **4**
2.1 Understanding Conflict: Greed and Grievance vs. Rent Seeking Models 4
2.2 Opportunity Cost and The Role of Aid in Conflict 7
2.3 Fungibility of Aid 12
2.4 Endogeneity of Aid 14
2.5 How Aid is Assigned 18
2.6 Causes of the Nepalese Civil War 20

3 Hypotheses **25**

4 Data and Summary Statistics **27**
4.1 Datasets 27
4.1.1 Conflict Data 27
4.1.2 Development Aid Data 28
4.1.3 Socio-Economic Data 31
4.2 Summary Statistics 33
4.2.1 Conflict Data 33
4.2.2 Development Aid Data 39
4.2.3 Socio-Economic Data 39

5 Empirical Strategy **41**
5.1 Proving Development as Random 44
5.1.1 Socio-Economic Characteristics on Aid Assignments . . . 44
5.2 Model for Hypothesis 1 48
5.3 Model for Hypothesis 2 51
5.4 Model for Hypothesis 3 54

6 Preliminary Findings **56**
6.1 Hypothesis 1 57
6.2 Hypothesis 2 59
6.3 Hypothesis 3 61

7 Robustness Testing **64**
7.1 Overview 64
7.2 Overdispersion and Zero-Inflation 66
7.3 Hypothesis 1 69

7.4 Hypothesis 2 70
7.5 Hypothesis 3 72
7.6 Additional Checks 73
7.6.1 Lagging Aggregated Aid and Hypothesis 1 73
7.6.2 Deaths and Events Where Rebels Move First and Hypothesis 1 74
7.6.3 Population and Hypothesis 1 75

8 Robust Testing: Two Stage Least Squares Results 78
8.1 Overview 78
8.2 Hypothesis 1 80
8.3 Hypothesis 2 81
8.4 Hypothesis 3 83

9 Conclusion 84

10 Appendix 1: Estimations 87

11 Appendix 2: List of Variables 110

LIST OF TABLES

4.1 Summary Statistics of Conflict Events by Year 35

4.2 Summary Statistics of Conflict Deaths by Year 36

4.3 Summary Statistics of Civilian Deaths by Year 37

4.4 Summary Statistics of Military Deaths by Year 38

4.5 Correlation Table of District Conflict Data 39

4.6 Summary Statistics of GDP of District 40

6.1 Summary of Preliminary Findings for Hypotheses 56

7.1 Statistical Problems Alleviated By Various Estimators 64

7.2 Summary of Preliminary vs. Robustness Test Findings for Hypotheses 65

8.1 Summary of Preliminary vs. Robustness Test vs. Two-Stage Least Squares Findings for Hypotheses 79

10.1 Aggregated Aid on Conflict Events 88

10.2 Aggregated Aid on Conflict Deaths 89

10.3 Aggregated Aid on Military and Civilian Deaths 90

10.4 Aid Sectors on Conflict Events 92

10.5 Aid Sectors on Conflict Deaths 93

10.6 Aid Sectors on Military and Civilian Deaths 94

10.7 Aid Concentration on Conflict Events 96

10.8 Aid Concentration on Conflict Deaths 97

10.9 Aid Concentration on Conflict Deaths 98

10.10 Development Aid and Rebel Initiated Events 99

10.11 Development Aid and Deaths from Rebel Initiated Events 100

10.12 2SLS Estimations for the Effect of Aggregated Aid on Conflict Events . . . 101
10.13 2SLS Estimations for the Effect of Aggregated Aid on Conflict Deaths . . . 102
10.14 2SLS Estimations for the Effect of Aggregated Aid on Civilian and Military Deaths . . . 103
10.15 2SLS Estimations for the Effect of Aid Sectors on Conflict Events 104
10.16 2SLS Estimations for the Effect of Aid Sectors on Conflict Deaths 105
10.17 2SLS Estimations for the Effect of Aid Sectors on Civilian and Military Deaths . . . 106
10.18 2SLS Estimations for the Effect of Aid Concentration on Conflict Events . . . 107
10.19 2SLS Estimations for the Effect of Aid Concentration on Conflict Deaths . . . 108
10.20 2SLS Estimations for the Effect of Aid Concentration on Civilian and Military Deaths . . . 109

11.1 T-test P-values of Socioeconomic Characteristics of Receiving and Not-Receiving Different Aid Projects . . . 114

LIST OF FIGURES

4.1 AidData Start Count by Year for Nepal 30

4.2 Total Number of Conflict Events by Year 35

4.3 Total Number of Conflict Deaths by Year 36

4.4 Total Number of Civilian Deaths by Year 37

4.5 Total Number of Military Deaths by Year 38

7.1 Distribution of Conflict Events 67

7.2 Distribution of Conflict Deaths 67

7.3 Total Conflict Deaths and Events on 2001 Population (in 10,000s) at the District-Level 76

7.4 Total Development Projects on 2001 Population (in 10,000s) at the District-Level 77

CHAPTER 1

INTRODUCTION

A civil war is perhaps one of the most impactful events on a nation's history and economy and has remnants of its effects long after ceasefire. There is a disputed argument in the development literature how development aid may fuel or inhibit violence during conflict. This study will examine the last six years of the Nepalese Civil War which occurred from 1996-2006 and claimed the lives of over 17,800 people (1% < of 2006 population). Of the 3,840 major attacks on public property facilities, there is an estimated loss of over $8.89 billion 2016 Nepalese Rupees ($83.113 million in 2016 USD). According to the Asian Development Bank, the destruction of the Civil War caused the country to forgo 3% in GDP growth (Ra and Singh 2005).

The development literature views development aid in conflict events under two frameworks: (1) a way that can increase the opportunity cost of violence or (2) a rent that attracts rebels to engage in violence due to payoffs from victory.

In order to test which view of development aid is more correct, I define three hypotheses in response to my three research questions with corresponding empirical strategies:

I formulate the following hypotheses for my study based on my research questions:

1. To what extent did the presence of development aid projects suppress or

encourage violence during the Nepalese Civil War (2000-2006)?

2. To what extent did different types of aid-sector-based development projects suppress or encourage violence during the Nepalese Civil War (2000-2006)?

3. To what extent did different levels of aid concentration suppress or encourage violence during the Nepalese Civil War (2000-2006)?

I first provide a literature review discussing the development aid and conflict literature. I follow by introducing my hypotheses and the data I use to test them. I define my empirical strategy for each hypothesis and discuss my corresponding preliminary findings. Changing my estimator type, I re-estimate my empirical strategies and discuss this in my robustness testing and various ways I test the exogeneity of aid assignment. I then discuss my results all together and discuss my study's contributions to the literature and future studies.

CHAPTER 2

LITERATURE REVIEW

2.1 Understanding Conflict: Greed and Grievance vs. Rent Seeking Models

The theories that explain how economic factors may affect or form civil conflicts typically sort into two competing ideologies. The first, defined by the seminal papers of Collier (2001 and Hoeffler 2004) defines the motivations for rebels to take up arms and become combatants in civil warfare. The model distinguishes by factors motivating greed and those motivating grievances, but Collier (1998) finds economic factors related to grievance to lead to more instances of conflict. The greed model believes combatants perform a cost-benefit model, whereby conflicts begin due to rebels desiring to seize funds that will allow them to continue fighting. These factors include lootable resources, which has caused an emergence of studies linking natural resource dependence to conflict onset. Weak states, or other conditions that favor insurgencies (not to be confused with ethnic or religious characteristics) can cause natural resources to be compromised by rebels (Fearon 2004). Likewise, the presence of natural resources can increase the benefit of a successful rebellion (Fearon 2003). However, the former framework is critiqued as these analyses are conducted using macro-level data to understand what is arguably micro-level behavior (Sambanis 2004).

This contrasts to rent-seeking models, whereby a government and rebel movement attempts to gain control of the resources of the state, but this is because they maximize their expected payoffs, net of the cost of engaging in conflict. The larger the potential pie to be won [creates a] greaterincentive to engage in warfare (Arcand and Chauvet 2001). Therefore in contrast to the greed and grievance framework which views conflict as an equilibrium phenomena and not an objective, rent-seeking behavior motivates rebels to continue acquiring rents to ensure their survival because of expected payoffs. In contrast to greed models, which argue rebels, continue engaging in warfare because of the resources available, rent-seeking models argue rebels continue engaging in warfare to increase their probability of survival (Neary 1997).

Both frameworks have been adopted in the conflict economics literature and do serve a role in understanding how a resource such as development aid can be framed as a rent or financial resource to motivate the onset of fighting or help fuel the continuation of fighting. Additionally, these frameworks both acknowledge the importance of socioeconomic factors, which can affect conflict. For the purposes of this literature, I adopt the latter framework which situates the Nepalese Civil War as a rent-seeking behavior model. This is in part due to the rich micro-data available, but also due the motivation of the Maoist rebels. It is documented that the Maoist rebels wished to overthrow the government, and were motivated to engage in conflict to transform the constitutional monarchy. Their goal for altering the political landscape of Nepal required their survival, and I believe motivates their engagement in conflict through a rent-seeking framework more accurately. Since development aid plays a significant role in the many GDPs of developing countries, it may implicitly motivate the continuation of conflict. Likewise, since development aid can also increase the opportunity cost for rebellion, it may disincentive individuals to engage in warfare.

2.2 Opportunity Cost and The Role of Aid in Conflict

The opportunity cost of joining a rebellion or overthrowing a government has been of interest to development and conflict economists. One of the widely accepted hypotheses within the literature is that countries with lower per capita incomes are more likely to engage in civil conflict (Collier 1998, et al. 2004; Fearon and Latin 2003; Blattman and Miguel, 2010). It is argued that impoverished individuals have a lower opportunity cost to rebel compared to wealthier individuals causing more conflict to occur in developing rather than developed countries. For this reason, there is an explored, but rather disputed underlying mechanism which links rising incomes and quality of life to the deterrence of civil conflict. Although Chassang and Padro (2009) and others do not accept this hypothesis, they do find a tangential positive relationship between the exposures to negative income shocks on causing conflict. Similarly, Berman et al. (2011), who frames the analysis of opportunity cost in regards to the unemployment rate, finds that the unemployed have a low opportunity cost of engaging in civil strife.

Before entering the discussion of aid and its relationship to violence further, it should be noted that Bozzoli et al. (2013) find that programs can be effectively implemented in conflict zones with a few modifications.

The literature often elucidates the opportunity cost of joining a rebellion or engaging in conflict through formulating a quasi-natural experiment, using development aid as a treatment (Crost and Johnston 2010, Dasgupta 2016, Sexton

2015). Whereby, development programs arguably increase rents, but also the incomes and standards of living of individuals, which raises the opportunity cost of rebellion. This new economic disincentive to rebel is often tied to the notion of contract theory whereby aid can cause citizens to foresee their governments as upholding the social contract. Similarly, not only can development aid increase incomes, it can also win hearts and minds, whereby citizens are satisfied with and loyal to their leaders through these development public works and as a result, suppress any desires of rebellion. In fact, a study by Arcand and Wouabe (2009) finds in the Angolan Civil War that the Angolan government used aid as a way to deter violence by targeting aid to areas that were close in proximity to fighting. Arcand believes this was in order to create a sort of nationalistic buffer zone, which reaffirms arguments of opportunity cost and contract theory. A shortfall of this study though is that it is unknown if the targeting of aid actually deterred conflict from occurring or reduced violence.

Studies on aid and conflict differ in findings though, which illustrates the inconclusive nature of how development aid programs channel to deterring or increasing conflict and the inherent need for better data and, in general, better spatial models (Blattman and Miguel 2010, Raleigh 2010). It should be noted that although there is an accepted link between poverty and inequality on conflict, there lacks a consensus on theories explaining how development aid policies deter conflict. An important distinction to be made is while development aid is used as a blanket statement, conflict studies typically frame aid in a particular context, such as the nature of the project (i.e. education vs. health), its fungibility, its donors, or even its executers (i.e. NGOs vs. government bodies).

For instance, Savun and Tirone (2011) finds democracy aid to be an effective tool in suppressing the risk of conflict. However in contrast, a study by Nunn and Qian (2013) finds a positive link between food aid and the duration and incidence of conflict. While Dube and Naidu (2015) finds military aid in Colombia to have no effect in guerrilla attacks, but does increase the occurrence of paramilitary homicides. These three types of aid are documented to have a variable degree in fungibility, increasing likelihood it can be pillaged by rebels (Strandow 2014).

Some studies highlight the potential for blanket development aid to deter violence, but vary the impact aid can have conditional on how well the state implements and secures the funds of projects (Crost and Johnston 2010, Dasgupta et al. 2016). Likewise studies on the same country display competing findings on how aid impacts violence. For example, Beath et al. (2011) finds that aid projects in Afghanistan may win over the hearts of individuals, but this does not necessarily translate to safer and more secure areas. Berman et al. (2013) echoes this finding; aid projects are successful to deter violence only when community members value the projects and the implementation relies on the behavior of non-combatants.

In contrast, another study actually finds that aid actually incentives counterinsurgency, whereby aid is ruled an ineffective measure in deterring rebels in contested arenas, ultimately increasing conflict (Sexton 2015). This notion of counterinsurgency in response to aid is found in work of Crost and Johnston (2010). He finds in the Philippines that unlike provinces that were ineligible for development projects, provinces that were barely eligible for aid have large increases in casualties.

Other research tries to link and consider the opportunity cost of recruitment and the effectiveness of recruitment in tandem with income levels, natural resource levels, or ethnic fragmentation (Gates 2002, Weinstein 2005, Montalvo and Reynal-Querol 2005, Kalyvas 2008, Wood 2010). For example, Kuhn and Weidmann (2013) finds the opportunity cost of recruitment is much lower for rebels if the civil war is ethnic-based versus income based. The reason behind this is due to the collective action that may occur if rebels are composed of competing identities, essentially people of a rebelling ethnicity are ”automatically” recruited. Furthermore, the difference in the motivations for war and their fueling be they anti-colonial, ethnic, or natural resource funded can have an impact on the length of the war (Fearon 2004, Chassang and Padro 2010).

Additionally, these studies shed light onto the competing yet complementary narratives on how poverty and ethnicity affect the onset and duration of conflict. For example, are individuals poor because of their ethnicity and how does this relate to their grievances to rebel? To what extent does ethnicity define someones income and access to economic opportunities? The studies on ethnicity conflict are not discussed fully here, as the Nepalese Civil War has been argued to be more of an ideology-based conflict. However considerations for ethnicity on civil conflict will be included in the estimation strategy as factors due to the abundant literature surrounding this topic.

Building off of this, a study of the Philippines by Arcand et al. (2010) adds a disclaimer by suggesting there is a distinction between ideology-based wars and ethnic-based wars on the responsiveness to aid. He finds that the effects of development aid on ethnic based wars decrease violence, but on ideology based wars increases violence. His model will be used in this paper to see if the presence of aid will increase violence in this particular ideology based conflict, possibly reaffirming his hypothesis.

2.3 Fungibility of Aid

Aid is deemed fungible in the development literature if a receiving country uses said aid on other expenditures outside of the intended project. A simple example of fungible aid would be if aid was meant to fund a school in a country, but the government was planning to build the school anyways and consequently uses the aid funds on something else. Fungible is in essence a measure of exploitation and loot-ability (Feyzioglu et al. 1998, Devarajan and Swaroop 1998) Non-fungible aid is found to decrease levels of conflict, for this aid is more likely to be executed successfully (van Weezel 2015). These studies illustrate in essence that the characteristics of an aid project may play a role in affecting violence. Furthermore, less fungible aid may considered more secure due to better oversight/implementation and thus perhaps less likely to be looted (Strandow 2014).

Feyzioglu et al. (1998) looks at the fungibility of aid on government expenditures and finds aid to not be fungible at the aggregate level. However she finds that aid is fungible for concessionary loans given to the agriculture, education, and energy sectors but not fungible in the transportation or communication sectors. Similarly to Strandow (2014), she finds that the monitoring of aid to be a key factor in determining fungibiliy. Strandow et al. (2016) argues that not only the fungibiltiy of the sector of aid, but the concentration levels of aid in a particular area can have effects on its prize worthiness for rebel movements. He finds that greater concentration levels of aid and less fungible aid increases military fatalities.

This finding differs from van Weezel (2015) who finds that non-fungible aid has a slightly negative effect on conflict levels. He argues that as larger aid flows increase the prize associated with capturing the state that provides rent-seeking opportunities[it also] simultaneouslydecrease[s] conflict risk as it improves state capacity. However, van Weezels findings show a weak relationship overall between fungibility and violence.

This framework is similar to the work of Berman et al. (2013, 2015) whom find that size of a project can reduce violence, particularly when the strength of the aid-receiving government's forces is large. Related, Collier and Hoeffler (2007) find no significant relationship of a nations aid creating an arms race externality, therefore establishing aid has no influence on the stability of political landscape.

2.4 Endogeneity of Aid

One of the large problems within the international development and conflict literature is that the distribution of aid is rather endogeneous and non-random. Areas that receive aid are likely to be poor and also likely, as a consequence of being poor, rebel. Furthermore, these communities are considered to be rather geographically remote—as there is often a rural dimension to poverty. Endogeneity manifests itself again as geographically remote and isolated areas are also key locations for rebel holdings due to lack of government oversight (Collier 2001, Buhaug et al. 2009). However correlation does not equal causation, which exemplifies the need for more robust modeling. Although development aid has been active in Nepal for sometime (Ramakant 1973), there exists primarily qualitative reports on Nepal linking aid programs and conflict or correlative studies (Gersony 2003, Bonino and Donini 2009, Do and Lakshmi 2006).

Likewise, the muddled relationships of aid, poverty, and geography illustrate how studies that use more country-level analyses are limited in exploring causality. Countries have variations in the distribution of aid, geography, and poverty, which may be lost at the aggregate level of in-between country analyses (Blattman and Miguel 2010). It should be noted however that within-country problems are not immune to other potential model specification problems.

For example, there are unanswered questions as to how the distribution of aid may be affected under conflict areas or the timelapse between the decision of donors to provide aid and the actual disbursement of it. Do donors and implementation actors stop their projects and pull out when conflicts arise? Berman et al. (2013) argues that development projects can still be successful depending on the availability of expertise during conflict. Likewise it unknown how favorably rebels view different types of development agencies and projects with respect to their own political agendas. Furthermore it is unknown if rebels will decide to ransack/attack/steal resources of one particular development project over another. In Nepal, many intergovernmental agencies report they were chased out of the Maoist controlled areas but some NGOs were able to continue to operate (Pettigrew 2013, Holmberg 2016). It is further unknown to what extent NGOs are funded by intergovernmental agencies and if rebel groups are aware of these details. The implementation of aid projects and some of the backlash aid organizations faced during the Nepalese Civil War is discussed in the subsequent sections. By the same token, there are also missing answers to whether aid allocation in conflict states is due to demand side needs or omitted biases of donor countries. By and large, it is troubling to compare nations on the influence of aid due to the fact aid allocation is not necessarily random.

For instance, it can be argued that certain countries receive more humanitarian aid in conflict areas due to the publicity they receive causing some conflicts, such as the Nepalese Civil War to be dubbed as a ”forgotten conflict” (Narang 2016). Even though the internal conflict in Myanmar is considered one of the longest civil conflicts in the world, the civil conflict in Syria is most discussed in politics and on Google Searches (Google Trends 2016). The asymmetric media attention regarding civil wars arguably affects the pressure citizens put on policymakers to aid certain countries. While this paper does not discuss humanitarian aid given during projects, but development aid, arguably the priority of countries to help another is nonrandom and politically motivated by donor countries. This paper does not address how the aid allocation of Nepal varies compared to other countries, but should be kept in mind in considering the robustness of development aid and conflict studies. Extensions of my thesis would be able to explore how donor characteristics may affect levels of conflict, especially when interacted with particular kinds of aid projects (i.e. health, agriculture).

Furthermore, the expectation of aid by rebels in rent-seeking models are often considered constant and unwavering in conflict analyses. These studies are deficient in capturing the complex nature of military strategy and lose their transferability by eliminating the feature of time. These concessions are not trivial, and as a result, the impact of foreign aid on the intensity of violent armed conflict has inconsistent findings.

Studies by Strandow (2014) uses propensity score matching to examine how aid in the context of funding concentration and barriers to exploitation affect the intensity of conflict in various Sub-Saharan African countries. Crost et al. (2014) is able to isolate the causal effect of aid on violence by using a regression discontinuity model. He finds that insurgents will sabotage aid programs noting that their success would win over the hearts and minds of possible recruits. Collier and Hoeffler (2002) echo the complex nature of aid on conflict for they find aid does not have a direct effect on conflict, but can indirectly affect the risk for violence conditional on a country's dependency on commodity exports.

Instrumenting is also used to overcome endogeneity especially in more macro between-country analyses. For example, Miguel et al. (2004) uses rainfall variation as an instrument variable for economic growth in various Sub-Saharan Countries. Using this method, he finds that the impact of growth shocks on conflict is not significantly different between wealthy and poor countries. The findings of Nunn and Qian (2014) link food aid positively to conflict after instrumenting with an index of the likelihood of receiving aid; however this instrument has been met with considerable backlash (DCHA/CMM 2014). Similarly to de Ree and Nillesen (2009), Nunn and Qian find that there is not a significant relationship between aid and the probability of the onset of conflict. De Ree and Nillesen, compared to Nunn and Qian, instrument the flow of aid by using the level of GDP for donor countries. De Ree and Nillesens findings are distinct from Nunn and Qian for he finds foreign aid has a significant negative effect on the probability of ongoing civil conflicts to continue.

One way to circumvent this endogeneity problem is to use within-country analyses and household survey data to create lagged parameters and fixed effects measures. Furthermore by using within-country analyses, studies do not wash or treat the disbursement of foreign aid in a country as equally distributed (Blattman and Miguel 2010). This reiterates the strength of in-country data, such as at the district-level, which will be used in this study.

2.5 How Aid is Assigned

The assignment of development aid is often self-selected, but often times ambiguous. Traditionally, the government of poorer countries work multilaterally or bilaterally with richer ”donor” countries to create development projects that can help achieve some anti-poverty goal. The process of manifestation of project and actual execution has some type of delay. This delay is perhaps caused by vetting requirements required by international organizations such as the World Bank on the impacts of the project, political talks between countries, and the nature of the aid project. For instance, grant-based projects and loan-based projects may require different kinds of bureaucratic processing before inaction.

That being said,independent of the vetting process, there are valid questions as to who actually gets selected for an aid project. I review aid development literature that is respective of the time period of study. This is to have representative behaviors of donors and the aid selection process.

Aid is not poverty-efficiently allocated (Collier and Dollar 2002, Cogneau and Naudet 2007). Collier and Dollar finds that aid is targeted and allocated in weak policy environments and in countries with severe poverty problems. Policy and the rule of law appear to be important considerations for donors and the effectiveness of aid (Dollar and Levin 2006, Djankov et al. 2009, Dreher et al. 2009, Younas 2008). This therefore may make the effect of aid heterogeneous depending on the type of product and who is the sponsoring donor. Furthermore aid selection can be determined by trade partners (Younas 2008, Berthelemy 2002), colonial ties (Alesina and Dollar 2000) or the intent of a donor country to democratize the recipient country (Bermeo 2011).

As a result of the perhaps non-random allocation of aid in Nepal for the time period in question, I use further two stage least square methods to reiterate the strength of my results.

2.6 Causes of the Nepalese Civil War

To understand the causes of the intensity of violence or the spread of insurgency during the Nepalese Civil War, scholars typically use a discrete choice model or a Poisson maximum likelihood model. Scholars also differ their response variable by either measuring the intensity of conflict, via number of fatalities, or degree of Maoist influence respectively. The distinguishing factors in the design of these papers are the construction of the minimum thresholds for significant intensity of conflict and the sample selection of specific Administrative zones. The country of Nepal has however changed its definition of administrative areas. Since September 20, 2015, the country is now divided into 7 provinces by grouping together the various 75 districts. Previously, the country had five development regions which were divided into 14 administrative zones (which were unions of the 75 districts). I adopt the latter specification in my analysis.

Keeping this in mind, Blattman and Miguel (2010) argue that civil war studies provide superficial explanations and lack in providing the underlying mechanism that truly causes conflict. For instance inequality does not automatically translate to a creation or tangible cause of conflict. For example, ethnicity or racial identity does not create wage disparities in economic labor literature but rather how the labor market perceives race. Thus it can be argued that the actual cause of war is unobserved and left in the "error term" (Gartzke 1999).

Murshed and Gates (2005) link the intensity of conflict in Nepal through the grieve and grievance framework of Collier and others. Their analysis finds that the intensity of conflict (measured in fatalities) is significantly linked to areas that are disadvantaged in terms of human development indicators and land holdings or ”grievance”. They along with Brown et al. (2010) cite horizontal inequality (i.e. unequal access to economic opportunities, asset inequality, etc.) as the main factor driving conflict and suggest that aid can lower the onset of violence by upholding the social contract (Addison and Murshed 2001). Because of the lack of natural resources in Nepal, they believe the ”greed” framework may not accurately capture the phenomena of the civil war. Not examining Nepal specifically, Hegre et. al (2001) find that intermediate regimes, like the one experienced by Nepal before the civil war, are most prone to violence.

Similarly, a study by Do and Lakshmi (2006) echoes these findings that areas with greater poverty and lower levels of economic development, signaled by road density, have a significant positive affect on the spread of violence conflict. Do additionally finds that the lack of economic opportunities is a stronger explanation for the spread of violence than social diversity. Moreover he explains that if ever, social polarization (i.e. caste system in Nepal) would cause conflict by affecting economic opportunities but it is not itself a causal factor. For example, lower literacy rates are more significantly and robustly related to higher intensity of conflict than a district’s caste composition. Unlike previous studies, Do further contributes to the literature in examining the influence of time, where he finds that overtime as Maoist rebels advance their control, considerably better off areas are more exposed to violence.

Hatlebakk (2009) disputes findings by Murshed and Gates by transforming their continuous parameter of casualties to a discrete variable indicating Maoistinfluenced districts. He finds through this dichotomous analysis that landlessness is negatively correlated with Maoist influence and is not a significant factor in affecting conflict after removing two core Maoist districts which he deems as outliers.

Bohara et al. (2006) finds that the exchange of violence can be explained through the influence of political opportunities (i.e. social and democracy) and that of natural geography (geographic opportunities). Similarly Holtermann (2016) finds that geography is a key influence on the spread of rebellion. More specifically, Joshi and Mason (2010) find land tenure patterns coupled with elite control to be key factors on the levels of political violence.

Holtermann (2016) and Macours (2011) disagree over the robustness of previous findings of Do and Murshed by viewing the spread of violence through relatively defined parameters rather than over time. For instance Holtermann finds human development indicators to be statistically insignificant, once the spread of violence is viewed in terms of government versus rebel capacity rather than time. Holtermann does not believe pre-existing conditions such as inequality and poverty can be cited as the mechanism in creating conflict as the capacity of rebels affects their strategy for insurgency.

Macours finds that it is not inequality that affected the abduction strategy of rebels to recruit rebels and their spread of influence, but the relative increases of land inequality between different socio-economic groups. Macours points out that in Nepal the poverty rate declined during the war years even though inequality increased. This therefore poses another caveat to understand how development aid influences conflict and to what extent aid manifests itself through a decline in poverty. Different from the findings above, Silwal (2013) finds once controlling for time and the proximity of areas to violence, Nepalese socioeconomic conditions such as poverty or related to geography are statistically insignificant in explaining the spread and intensity of violence.

Shortfalls of these previously cited studies is that although they cite economic inequality as a role in affecting the conflict, they do not demonstrate whether public policy such as development aid played a role in deterring or encouraging conflict. Development aid can influence not only poverty but also the inequality composition of a society. It should be noted that reports and qualitative studies make a connection that aid may have affected conflict in Nepal, but argue this based on aid being an example of ”failed development” (Bonino and Donini 2009, Gersony 2003). This does not literally mean that aid increases the likelihood of conflict, but rather claims if coupled with ineffective implementation, aid can. However these qualitative reports often argue that because aid was ineffective before the war, it caused people to rebel, which is a rather shallow explanation.

Equally important, few studies use the destruction of public works, national trust, or human capital effects (De Juan and Pierskalla 2016, Pivovaraova and Swee 2015) as a measure of conflict intensity besides human fatalities. Furthermore most human fatalities as conflict intensity studies do not distinguish between military and civilian fatalities. This is often due to data limitations, but does pose possible consequences. By focusing on only human fatalities, studies are limited in understanding conflict by only measuring correlations between economic factors such as poverty on income inequality on human life. This poses a problem, for instance, the probability of one rebel soldier dying may not be equal to that of a government soldier. The weights of the capacity of individuals to kill are perplexing to model. Likewise the conclusions of these studies create problems in defining the value of human life in cost-benefit analyses to justify economic development. Would a hypothetical reduction in 2.5 human lives be worth an addition $100 of economic development aid? The answer to this is not trivial and illustrates the frustrating conclusions of economics of conflict literature. Likewise, are policymakers more concerned with how aid affects civilian causalities than rebel-related causalities? These considerations are often not aware in conflict economic analyses.

My study remedies these shortfalls by introducing more accurate measures of foreign aid influences by linking household survey data and aid projects more effectively. By introducing measures of civilian and military fatalities, my study allows to see how aid can influence different populations during conflict.

CHAPTER 3

HYPOTHESES

I formulate the following hypotheses for my study based on my research questions:

1. To what extent did the presence of development aid projects suppress or encourage violence during the Nepalese Civil War (2000-2006)?

Hypothesis 1: Aggregated aid projects have a positive effect on conflict violence.

2. To what extent did different types of aid-sector-based development projects suppress or encourage violence during the Nepalese Civil War (2000-2006)?

Hypothesis 2: Different aid-sector-based projects have the same effect on conflict violence.

3. To what extent did different levels of aid concentration suppress or encourage violence during the Nepalese Civil War (2000-2006)?

Hypothesis 3: Different levels of aid concentration have the same effect on conflict violence.

The motivation for Hypothesis 1 originates from the literature where aid is either found as a motivator or deterrent for violence.[1] This depends if aid is seen: 1) as a rent which increases violence due to increasing the value of the "prize" gained from victory or 2) a mechanism that increases the status of living for citizens and thus increasing opportunity cost to rebel. Hypothesis 2 and 3 are more narrow examinations of the more aggregated view of development aid in Hypothesis 1. However, Hypothesis 1, 2, and 3 are independent from one another, the findings of one does not imply findings for others.

[1] Arcand (2010) finds a positive relationship between aid levels and conflict in ideology-based conflicts, which would be an appropriate categorization for the Maoist Nepalese Civil War.

CHAPTER 4

DATA AND SUMMARY STATISTICS

4.1 Datasets

Below I discuss the sources of my Conflict Data, Development Aid Data, and Socio-Economic Data.

4.1.1 Conflict Data

The conflict data for this study comes from the Uppsala Conflict Dataset from Upsala University, which has an extensive list of modern-day conflict events since 1989. I specifically use the "UCDP Georeferenced Event Dataset version 5.0. (2015)"[1] The dataset is rich for it provides information on conflict events, the best estimate of fatalities, a geo-referenced location of the event, and even lists the sources where the event was mentioned. Other characteristics such as which parties were involved or how long the event lasted for are included as well. As a result, this dataset has been a major contribution to the conflict economics literature and boasts over 100 publications.[2]

Using this dataset, I choose Nepalese conflict events during the 2000-2006 time period for this study. I construct a time series panel of selected variables and

[1]The dataset can be accessed here: http://ucdp.uu.se/downloads/

[2]See http:///www.pcr.uu.se/research/ucdp/publcations/ for the entire list.

index them by 84 month time periods and the 75 districts of Nepal. Due to representative constraints in my development aid and socio-economic data, to be discussed below, I end up only focusing on 69 districts.

The variables that originate from the Uppsala Conflict Dataset that are used in my primary analysis are the following: the total number of conflict events, the best estimate of total fatalities, the total number of civilian fatalities, and the total number of military fatalities. I use the term "fatalities" and "deaths" interchangeably in this paper. For further robustness testing found in Section 7.6.2. of my study, I create these same parameters, but condition them on being the result of a rebel-initiated conflict event.

Because of the lack of precision in the geocoding of the Uppsala Dataset, I am unable to find rich data at the ward level. As a result, I must collapse my data to the district level which is the justification for my development aid and socio-economic data to be also indexed at the district level.

4.1.2 Development Aid Data

The development aid data for this study comes from the College of William and Mary's AidData Group. I specifically consult their "Nepal AIMS, Level 1, Version 1.4.1"[3] dataset which represents all projects in the Nepal's Aid Management Platform, established in 2010, which is maintained by Nepal's Ministry

[3] This dataset can be accessed here: http://aiddata.org/subnational-geospatial-research-datasets

of Finance. The dataset includes 873 projects implemented in 20,952 locations by 110 donors for years 1997-2014. I select aid data for years 2000-2006 that is geocoded to at least the district level. I construct a time series panel dataset that is indexed at the district and month level for the following variables: the aggregated number of active development projects, the types of active development projects, and the aid money spent on said projects in a district. I assume here that the money designated for an aid project is equally disbursed during each month the project is active.

There are 25 unique projects in my study that are enacted in over roughly 3,500 unique locations during my time frame of study. For the purposes of this study, and specifically evaluating Hypothesis 1, I use the 3,500 unique locations to be the total number of aggregated aid projects.

The dataset also includes a coding for the sector at which the project was meant to impact. Some projects are multi-pronged and have combined initiatives such as "health" and "education." These assignments are given in the dataset which have been categorized by the Nepalese Ministry of Finance. For testing Hypothesis 2, I make the same time series panel dataset but add an extra index for sector.[4]

One of the shortfalls of the data, as described in its read-me manual is that there are few projects recorded for the beginning years of my study. This is perhaps due to the fact the central record keeping of aid projects was not formalized until

[4] If a project is dubbed to be both "education" and "health," I do not consider it belonging to a specific sector and therefore it would not be indexed. I only examine single-sectored designated projects for testing Hypothesis 2.

2010. Seen Figure 4.1, it should be noted that my development aid observations are more weighted in later month time periods. This limitation of the data is a reason for why I do not study the entire range of the conflict.[5] However, by using random effects and other time specific effects in my study, I believe I can overcome this shortfall.

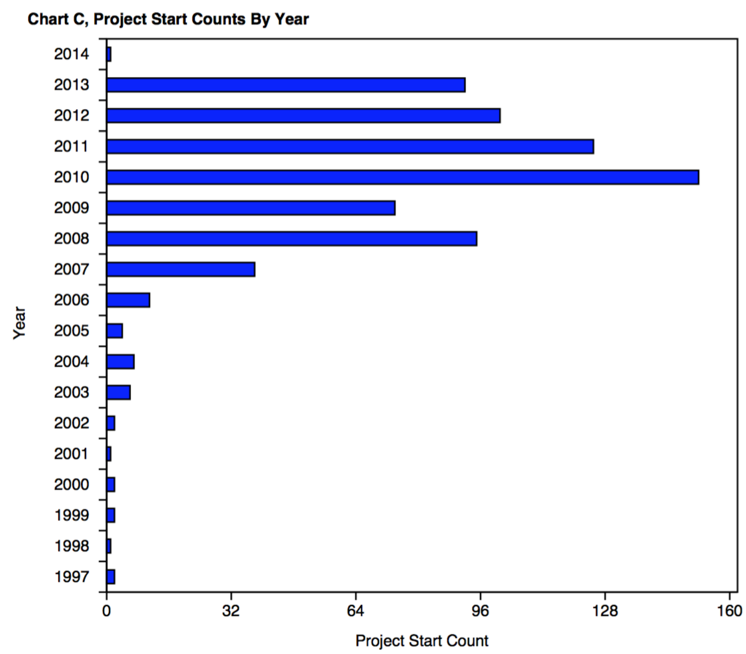

Figure 4.1: AidData Start Count by Year for Nepal

Additionally, I omit three districts from my analysis for there are no active development projects during the time period of study. I am uncertain if the omission is due to a sincere lack of projects or measurement error.

[5] Furthermore, studying the entire conflict period may provide different implications on how aid affects the onset versus continuation of violence.

4.1.3 Socio-Economic Data

The socio-economic data for this study are provided by three sources. The first is Panel 1 of the National Living Standards Survey, conducted in 1996. The NLSS survey is only representative of 72 of the 75 districts, which modifies my analysis further when considering aid data sampling to 69 districts. The NLSS survey is conducted at the ward-level but is collapsed to the district level using sampling weights.

The two other datasets are from digitizing texts I consulted at the Library of Congress. Firstly, the 2004 United Nations Development Report of Nepal (UNDP 2004) provides other district-level socio-economic information from 2001. The United Nations Human Development Report for Nepal has been prepared since 1998, with the 2004 version focusing on citizen empowerment and social and economic outcomes.

Secondly, the Districts of Nepal Indicators of Development 2003 (DNID) provides information on local municipality budgets. The district level indicators were commissioned by the National Planning Commission Secretariat using Central Bureau of Statistics data.

For my analysis I use 21 socio-economic district-level variables such as the GDP of a district, the percentage of female-headed households, the percentage of households employed by agriculture, and the district share of the total development in budget expenditures (in millions of Nepalese Rupees). A list of these particular variables and their corresponding data source are provided in Section 11, Appendix 2.

4.2 Summary Statistics

Below I present summary statistics for my conflict data, my development aid data, and my socio-economic data.

4.2.1 Conflict Data

The Upppsala Dataset for this time period reports 3,954 conflict events which are decomposed by year in Figure 4.2 at the district level. The most conflict events occurred during years 2002 and 2004, which also happened after cease-fires experienced in 2003 and 2005. The least amount of conflict events occurred during 2000 and 2006. As confirmed by Table 4.1, on average a district experienced 18 total conflict events in 2002 and 14 total conflict events in 2004. This is in contrast to roughly 2.3 total conflict events in 2000 and 2006.

This yearly pattern is also found in Figure 4.3 which decomposes the 9,252 Uppsala Dataset reported conflict deaths by year at the district level. For as we see, 2002 and 2004 had the deadliest years. As described in Table 4.2, districts had on average a total of 53 deaths in 2000 and on average a total of 29 deaths in 2004. Similarly, 2000 and 2006 had on average the least total number of conflict deaths of 4 and 6 deaths respectively.

Within the recorded 9,252 deaths, in the Uppsala Dataset, are 1,704 civilian deaths and 1,316 military deaths. The decomposition of total civilian deaths by year at the district level is found in Figure 4.4. As seen in Table 4.3 when comparing the mean and median of civilian deaths, it appears that fewer districts experience civilian deaths but the ones who do, experience it at very large quantities. This is reconfirmed in Figure 4.4 with the spread of outliers especially in year 2002.

The 1,316 military deaths from the Uppsala Dataset are decomposed by year at the district level in Figure 4.5. However, it should be noted, unlike the high levels of overall deaths and events in 2002, the Uppsala dataset reports no military deaths in 2002. Furthermore, 2005 which experienced a ceasefire has the largest average total number of military deaths at the district level, as seen in Table 4.4.

Table 4.5 presents the correlations between the annual levels of conflict (deaths, events, civilian deaths, and military deaths) and the 2001 population. There does not appear to be a high correlation between population and the annual levels of conflict. There are larger correlations between conflict deaths and conflict events, but this is due to the fact a conflict death must occur during a conflict event. There is a higher correlation, or probability of a civilian death occurring than a military death occurring during a given conflict event.

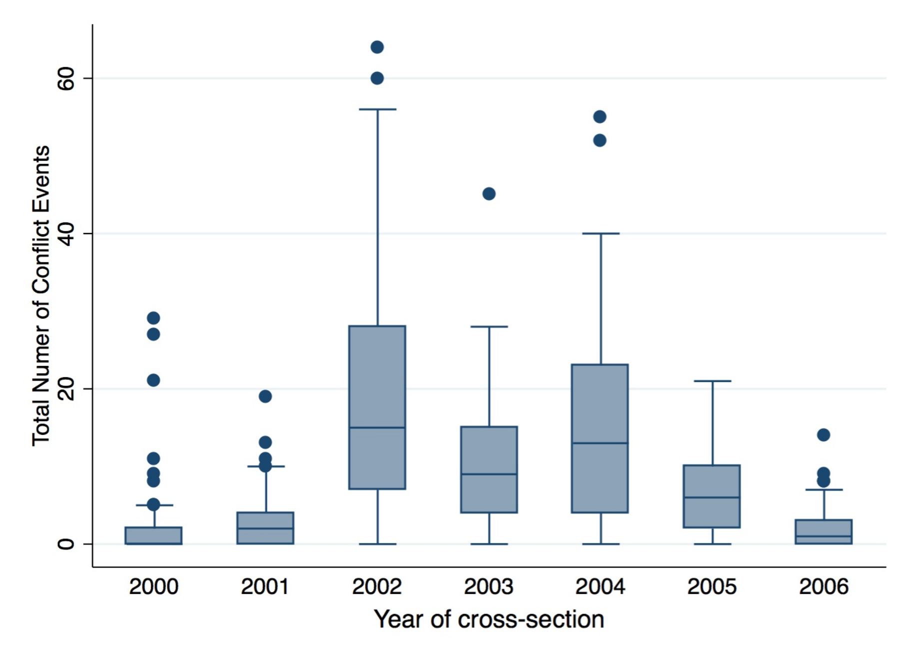

Figure 4.2: Total Number of Conflict Events by Year

This boxplot is grouped at the district level and decomposed by year where each dot represents the total conflict events for a given district. Additionally, the horizontal line within the box indicates the median. Further, the boundaries of the box indicate the 25th and the 75th percentile and the whiskers indicate the highest and lowest values of the results. The dots outside of the box represent outliers.

Table 4.1: Summary Statistics of Conflict Events by Year

Variable	Obs	Mean	Std. Dev.	Min	Max	Median
2000	69	2.275	5.512	0	29	0
2001	69	2.812	3.512	0	19	2
2002	69	17.957	15.492	0	64	15
2003	69	9.928	8.277	0	45	9
2004	69	15.014	12.978	0	55	13
2005	69	7	5.973	0	21	6
2006	69	2.319	2.923	0	14	1

These summary statistics describe the total number of conflict events at the district level.

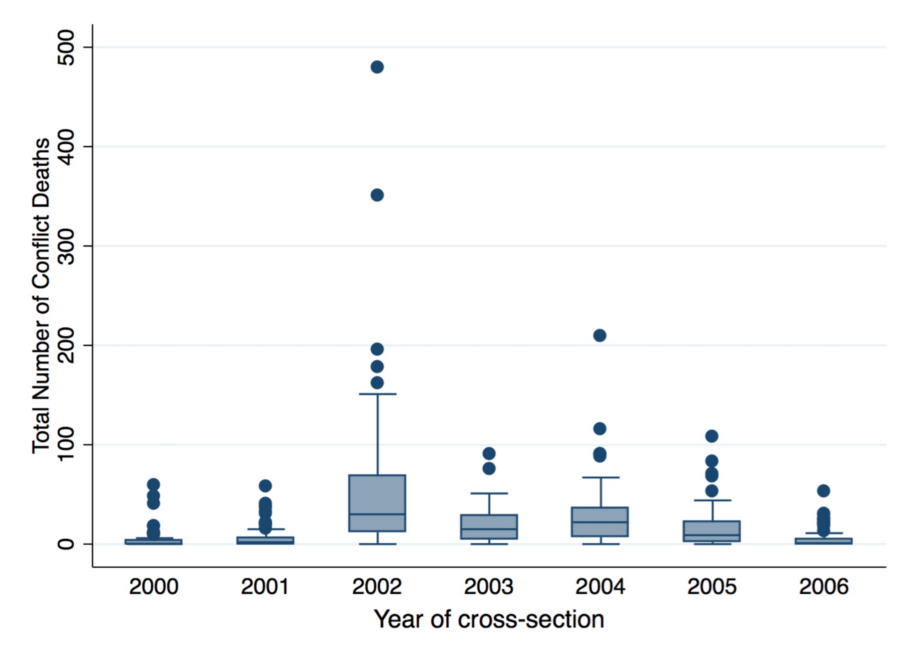

Figure 4.3: Total Number of Conflict Deaths by Year
This boxplot is grouped at the district level and decomposed by year where each dot represents the total conflict deaths (the sum of civilian, rebel, and military forces) for a given district. Additionally, the horizontal line within the box indicates the median. Further, the boundaries of the box indicate the 25th and the 75th percentile and the whiskers indicate the highest and lowest values of the results. The dots outside of the box represent outliers.

Table 4.2: Summary Statistics of Conflict Deaths by Year

Variable	Year	Mean	Std. Dev.	Min	Max	Median
2000	69	4.145	10.529	0	59	0
2001	69	7.043	11.85	0	58	2
2002	69	53.174	78.263	0	480	30
2003	69	19.348	18.246	0	90	15
2004	69	28.536	33.646	0	209	22
2005	69	15.971	21.251	0	108	9
2006	69	5.87	10.264	0	53	1

These summary statistics describe the total number of conflict deaths at the district level.

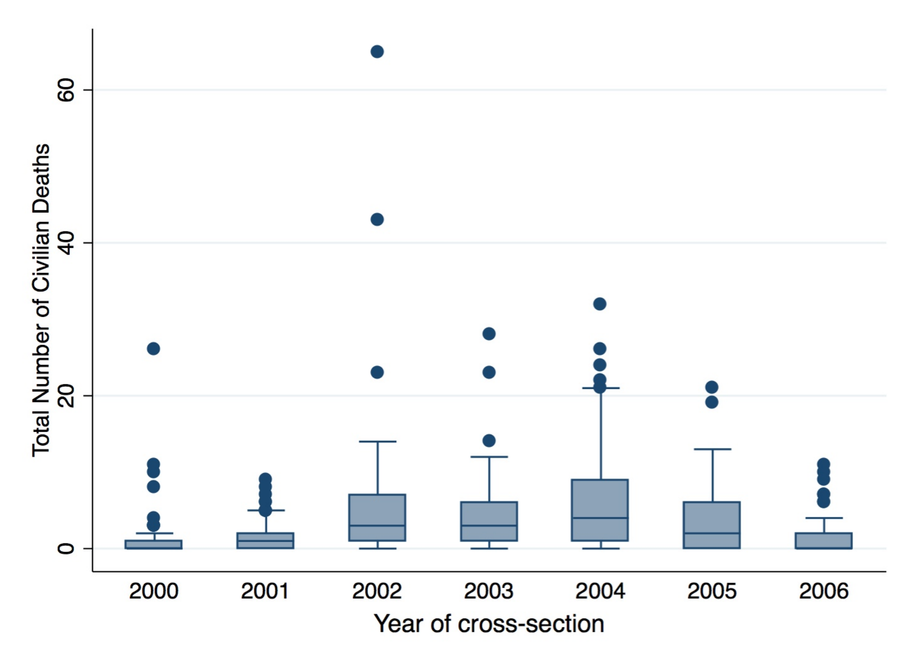

Figure 4.4: Total Number of Civilian Deaths by Year

This boxplot is grouped at the district level and decomposed by year where each dot represents the total civilian deaths for a given district. Additionally, the horizontal line within the box indicates the median. Further, the boundaries of the box indicate the 25th and the 75th percentile and the whiskers indicate the highest and lowest values of the results. The dots outside of the box represent outliers.

Table 4.3: Summary Statistics of Civilian Deaths by Year

Variable	Obs	Mean	Std. Dev.	Min	Max	Median
2000	69	1.275	3.682	0	26	0
2001	69	1.551	2.159	0	9	1
2002	69	5.884	9.568	0	65	3
2003	69	4.536	5.011	0	28	3
2004	69	6.478	7.091	0	32	4
2005	69	3.58	4.483	0	21	2
2006	69	1.391	2.481	0	11	0

These summary statistics describe the total number of civilian deaths at the district level.

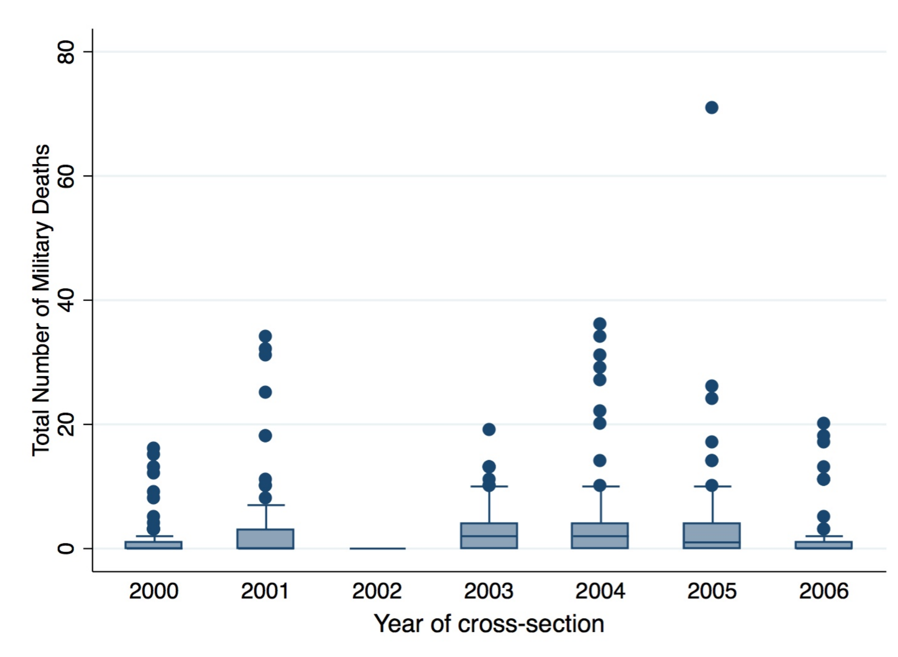

Figure 4.5: Total Number of Military Deaths by Year

This boxplot is grouped at the district level and decomposed by year where each dot represents the total military deaths for a given district. Additionally, the horizontal line within the box indicates the median. Further, the boundaries of the box indicate the 25th and the 75th percentile and the whiskers indicate the highest and lowest values of the results. The dots outside of the box represent outliers.

Table 4.4: Summary Statistics of Military Deaths by Year

Variable	Obs	Mean	Std. Dev.	Min	Max	P50
2000	69	1.551	3.587	0	16	0
2001	69	3.638	7.772	0	34	0
2002	69	0	0	0	0	0
2003	69	3.174	4.004	0	19	2
2004	69	4.884	8.593	0	36	2
2005	69	4.029	9.777	0	71	1
2006	69	1.797	4.51	0	20	0

These summary statistics describe the total number of military at the district level.

Table 4.5: Correlation Table of District Conflict Data

Variables	2001 Population	Conflict Deaths	Conflict Events	Civilian Deaths	Military Deaths
2001 Population	1.000				
Conflict Deaths	-0.008	1.000			
Conflict Events	0.089	0.490	1.000		
Civilian Deaths	0.069	0.321	0.457	1.000	
Military Deaths	0.008	0.425	0.224	0.100	1.000

These correlations are made comparing total conflict levels during the time period of study and 2001 population data collapsed at the district level.

4.2.2 Development Aid Data

There are 25 development projects worth over $1.9 billion with over 35,000 locations active in the time period of my study. Here, I associate the number of ”projects” to be the number of unique locations a project is enacted. Within the 25 development projects, there is 1 education-sector based project with 315 locations, 2 health-sector based projects with 78 locations, 4 water-sector based projects with 1179 locations, 5 energy-sector based projects with 162 locations, 2 agriculture-sector based projects with 49 locations, and 2 general budget-sector based projects with 2,104 locations.

4.2.3 Socio-Economic Data

Here I discuss some of the socio-economic data used in my analysis. The average log district GDP (in millions of Nepalese Rupees) from the UNDP 2004 dataset, is 8.233 with a minimum of 5.835 and a max of 10.785 as presented in Table 4.6. The four variables included in Table 4.6 are all right-skewed due to the district of Katmandu where the capital is located. Katmandu is the major outlier for all of these socioeconomic variables.

Table 4.6: Summary Statistics of GDP of District

Variable	Obs	Mean	Std. Dev.	Min	Max	P50
Log District GDP (in millions of Nepalese Rupees)	5796	8.233	.836	5.835	10.785	8.273
Per Capita Income (in millions of Nepalese Rupees)	5796	.018	.018	.009	.157	.015
Log District Development Budget expenditure in Nepalese Rupees	5796	19.149	.939	15.976	23.607	19.034
Gini	5796	.562	.234	0	1	.551

CHAPTER 5
EMPIRICAL STRATEGY

I consider the general framework strategy below for my study, whereby I seek to understand the effect of development aid on conflict violence. To understand this relationship, I use the micro-level district data from the Nepalese Civil War, as discussed in Section 4.

As mentioned previously, if development aid affects conflict violence positively, it can be concluded that development aid is seen as a rent therefore increasing the incentive for violence and the ”pot” of gains from victory. If development aid affects conflict violence negatively, aid can be concluded as a deterrent for violent by successfully increasing the opportunity cost of engaging in fighting and thus discouraging violence.

Although aid is not randomly assigned, I prove it to be exogenous below, after defining my general estimation strategy. By proving this exogeneity of aid in Section 5.1 and 5.2, I can assume causality of aid on violence. I also do further endogeneity testing using 2SLS models later in Section 8.

For a given district, I view conflict violence here to be a function of development aid and socio-economic characteristics:

conflict violence = f(development aid, socio-economic characteristics)

The relationship above also includes a district-specific random effect, an unobserved municipality-specific effect, and an unobserved time-specific shock that affects all districts equally.

For my identification strategy, I choose conflict violence to be represented by four different parameters: conflict events, conflict deaths[1], military deaths, and civilian deaths. Due to the count nature of these dependent variables, and like many models in the conflict economics literature[2], I adopt a poisson with random effects model for all my regressions.[3]

I test the strength of my preliminary findings by using a zero-inflated negative binomial models in Section 8. I do this in order to confront possible bias of my preliminary finding estimations due to characteristics of my dependent variables.

Below I first try to prove the assignment of aid as random or exogeneous in order to solidify my claims of exogeneity of aid in Section 5.1 and 5.2. I first do this by regression project levels on socio-economic variables as found in this study. I further propose a 2SLS specification further explored in Section 8. There, I identify unbalanced socio-economic variables as a FSLS specification and use predicted values in my 2SLS specification. I use a zero-inflated negative binomial model in my 2SLS specification and compare these results with those found in Section 7.

[1] It should be noted conflict deaths is a sum of military, civilian, and rebel fatalities

[2] Arcand (2010), Crost (2014), Macours (2011), Dasgupta (2016)

[3] Arcand (2010) uses a tobit model with death data, but omits his reasoning. Therefore, I do not find any statistical reason to not use it over a poisson with random effects model, and thus adopt this approach.

The three hypotheses vary in their identification of the development aid parameter, T. Their respective models are presented below in Section 5.2-5.4.

5.1 Proving Development as Random

5.1.1 Socio-Economic Characteristics on Aid Assignments

Test 1

One of the issues that can arise from looking at the relationship between development aid and conflict is the non-random assignment of aid projects. Whereby countries, or even localities, are inherently more likely to receive aid. Furthermore, other latent variables are not observed in the aid distribution process. For instance, it is possible that donors may be more willing to distribute aid in areas which are least prone to violence.

Here, I test to see if the assignment of aid is random by performing two regressions with different forms of my aggregated aid parameters (the treatment dummy for having at least one project and aid funds). Firstly, I regress the parameters on district socioeconomic variables found in Appendix 2 used for my study. Secondly, I regress the parameters on district socioeconomic variables found in Appendix 2 used for my study with zone dummies. Thirdly, I regress the parameters on district socioeconomic variables found in Appendix 2 used for my study with district dummies. The general regressions are found framed below:

1. aggregated aid parameters (present? Y=1, N=0; aid funds) = f(socio-economic characteristics)
2. aggregated aid parameters (present? Y=1, N=0; aid funds) = f(socio-economic characteristics, zone dummies)
3. aggregated aid parameters (present? Y=1, N=0; aid funds) = f(socio-economic characteristics, district dummies)

The first and second estimation find a significant relationship between socio-economic covariates and receiving at least one aid project or the amount of aid funds received. However, when including district dummies, all of the socio-economic covariates are all insignificant, therefore illustrating that when district fixed effects are considered, the assignment of aid can be considered random.

For hypothesis 2, I explore projects targeting a specific sector. I also do the following exercise from above. The relationship between different aid-sector based projects (i.e. education, health) have parallel findings to those found above.

Therefore, by doing so, the dependent variables are insignificant, and the assignment of aid can be considered randomly assigned. This is because development aid is uncorrelated with the socio-economic characteristics with the inclusion of district dummies. Therefore following test 1, the treatment of development aid is orthogonal on observables and thus aid can be considered randomly assigned.

Test 2

Additionally for a post regression robustness check discussed to a larger extent in Section 8, I collapse my data to the district level and compare the socioeconomic means of districts which received aid and those who did not by running t-tests. I find depending if I examine the aggregated level of aid, different sectors of aid, concentrations of aid, where certain socioeconomic variables are not balanced. For instance, areas with lower levels of secondary education are statistically more likely to receive education aid projects compared to those who higher levels of education. A breakdown of socioeconomic variables that are not balanced in the assignment of aid is found in Table 11.1 in Appendix 2.

I use socioeconomic variables which have a p value less than .2 to be included in my first stage regression. For my first stage, the type of model used varies on the corresponding dependent variable. Since I measure aid presence by either a treatment (education project? yes or no, did they receive any aid? yes or no; Y=1, N=0), the number of projects, or the total number of funds, I cannot use the first stage as a poisson model. For the treatment variable, I use a logistic model with random effects in the first stage. For the total number of projects I use a poisson random effects model. For the total number of funds I use a linear random effects model, appropriate for monetary-based dependent variables. Lastly, for concentration based variables such as being classified as high or low concentration I use a logistic model with randome effects as well. The general model for the first stage least squares regressions are listed below:

First Stage Least Squares Regressions

1. Aid Present? (Y=1, N=0) = f(unbalanced socio-economic variables)

   Logistic Regression with Random Effects

2. Number of Projects Present? f(unbalanced socio-economic variables)

   Poisson Regression with Random Effects

3. Logistic Aid Funds = f(unbalanced socio-economic variables)

   Linear Random Effects

I then compare the coefficients of the 2SLS regression after my robustness checks of using a zero-inflated negative binomial model from Section 7 with these findings in Section 8. I compare the results for each hypothesis and reaffirm of nullify previous findings as causal.

5.2 Model for Hypothesis 1

To test hypothesis 1,

Hypothesis 1: Aggregated aid projects have a positive effect on conflict violence.

I choose the following empirical strategy:

$$E[Y_{it}|T_{it}, X_i, \ldots] = \exp\{T_{it}\alpha + \sum_{f=1}^{n} X_i\beta_f + u_i + \delta_t + \epsilon_i + \eta_{it}\}$$

- Y_{it}: **Conflict Violence** as measured by conflict events, conflict deaths, military deaths, or civilian deaths
- T_{it}: **Aggregated Aid Projects** as measured by general project presence (a dummy variable), the total number of projects active, logged total aid project funds disbursed
- $\bar{X}_i$: **Socio Economic Characteristics** See Appendix 2 for a complete list of these.
- u_i: **District-specific Random Effect**
- δ_t: **Unobserved Time-Specifc Shock** which can be assumed to affect all districts equally
- ϵ_i: **Unobserved municipality-specific effect**
- η_{it}: **Idiosyncratic Disturbance Term**

I use the four different dependent variable parameters as introduced before, conflict events, conflict deaths, military deaths, and civilian deaths, to be represented as Y_{it} whereby conflict violence is presented for each district i in month time period t.

I formulate three different independent variables as different measures of aggregated (or "pooled") aid project presence, T_{it}. I use one identification of said presence using the general dummy treatment found in Arcand et. al (2010) but modify two other development aid presence indicators.[4] The general dummy treatment which is I dub as "general project presence" is equal to 1 if there is at least one development project active in a district i in month time period t.[5] The second form of aid project presence is the total number of projects active in district i in month time period t. The third and last form of aid project presence I consider is the logged total aid project funds distributed in a district i in month time period t. This is not the aggregated total of funds since 2000, but the total number of funds that are disbursed in that particular month time period i. For this variable, I assume that there is an equal distribution of funds for a project.[6]

Together, I choose to estimate, only eight regressions to test this hypothesis rather than 12 exhaustive[7] regressions. I estimate three poisson with random effects models for each of the three independent variables T_{it} of aggregated aid

[4]This is due to the fact I am pooling all development aid projects rather than simply one project found in Arcand et. al (2010). Arcand uses the number of months a project is active and the accumulation of funds to an areas from one particular project. Since I am considering all projects for hypothesis 1 his variables are not appropriate without modification.

[5]Here district refers to one of the 75 districts in Nepal and month time period refers to a particular month in the range of January 2000-November 2006.

[6]Consider a hypothetical project active in a district for a year with a budget of \$60 million USD, I assume each month the district receives \$5 million USD

[7]Exhaustive if considering combinations of the four dependent variables with the three independent variables

projects on *conflict events*. I then conduct three poisson with random effects models incorporating all independent variables of aggregated aid projects on *conflict deaths*. Lastly, I execute two poisson with random effects models examining general aid project presence dummy on *military deaths* and *civilian deaths*.
To Do: Chart of the eight regressions

My estimation strategy, besides the modification of the two independent variables and the consideration of civilian and military deaths, is a replication of the estimation strategy in Arcand et al. (2010). In order for the model to correctly identify the effect of development aid on conflict, the following assumptions have to be considered.

Besides having accurate data, the variables assume that there is little variation in district socio-economic characteristics overtime, as they are exogenously observed. I also assume that aid is exogeneously distributed to districts which I confront in Section 8's 2SLS estimations. Furthermore, I assume that there is little variation in the quality of aid projects in terms of their execution, quality, security, etc. For example, donors have relatively the same set of best practices they use in executing aid projects.

5.3 Model for Hypothesis 2

To test hypothesis 2,

Hypothesis 2: Different aid-sector-based projects have the same effect on conflict violence

I choose the following empirical strategy. Here, I modify the meaning of the T_{it} parameter from the Empirical Strategy for Hypothesis 1 and introduce a k subscript for a corresponding aid-sector, T_{itk}. All other variables have the same meaning as defined in the Empirical Strategy for Hypothesis 1.

$$E[Y_{it}|T_{itk}, X_i, \ldots] = \exp\{\textstyle\sum_{k=1}^{6} T_{itk}\alpha_k + \sum_{f=1}^{n} X_i\beta_f + u_i + \delta_t + \epsilon_i + \eta_{it}\}$$

- T_{itk}: Sector-Based Aid Projects as measured by sector project presence (a dummy variable), total number of sector projects active, logged total aid sector project funds disbursed

I create now k versions of the three independent variables used in the empirical strategy of hypothesis 1 for T_{it}. I transform the project presence, the number of projects active, and the logged total aid project funds parameters to become indexed at the k level, T_{itk}. The k index coordinates to the six aid sectors I consider analyzing: education, agriculture, health, water and sanitation, general budget, and energy. I use the classification provided by the AidData dataset in assigning the categories to aid sectors. I choose these six sectors out of the 17 sector labels included in the dataset.

To illustrate T_{itk} further, I create an education dummy treatment which is equal to 1 if there is at least one education project active in district i in month time period t in which k = *education* sector. Analogously the second form of education aid project presence is the total number of projects active in district i in month time period t in the k = *education* sector. Lastly, I consider the logged total education aid project funds distributed in a district i in month time period t in the k = *education* sector. I repeat this for the other five remaining sectors.

Here, I estimate again only eight regressions to test this hypothesis rather than the 12 exhaustive regressions. Again, for all estimations I use a poisson with random effects models approach. I conduct three regressions, incorporating the three versions of T_{itk}, on conflict events. Analogously, I do the same but change conflict events for conflict deaths. Lastly, I estimate two regressions using only the sector dummies of T_{itk} on civilian deaths and the other on military deaths.

My estimation strategy differs as described in my hypothesis 1 approach from Arcand. However, here I consider findings of Strandow (2014),[8] which investigates how sectors affect military and civilian deaths.

Here I must make the assumption that projects grouped in a particular sector are executed similarly. Moreover, it must be assumed that there is more variation between aid-sector based projects than within aid-sector based projects. This

[8]Strandow considers fungibility of sectors specifically and does not identify the sectors as I have.

variation includes the quality of execution of the project, the type of oversight and security of said projects, or even the composition of capital versus labor resources of said projects.

5.4 Model for Hypothesis 3

To test hypothesis 3,

Hypothesis 3: Different levels of aid concentration have the same effect on conflict violence

I choose the following empirical strategy. Here, I again modify the meaning of the T_{it} parameter from the Empirical Strategy for Hypothesis 1 and introduce a c subscript for a corresponding level of aid concentration, T_{itc}. All other variables have the same meaning as defined in the Empirical Strategy for Hypothesis 1.

$$E[Y_{it}|T_{itc}, X_i, \ldots] = \exp\{\sum_{c=1}^{7} T_{itc}\alpha_c + \sum_{f=1}^{n} X_i\beta_f + u_i + \delta_t + \epsilon_i + \eta_{it}\}$$

- T_{itc}: Aid Concentration Levels as measured by development aid divided by population, dummies for the top 25% percentile, the bottom 25% percentile, or one of five quartiles of aid (base being where there are no aid projects active)

To identify concentration T_{itc}, I divide the project money allocated for aid projects by the population of a district in a district i that are active in month time period t. Depending on the measure of T_{itc} I am using, I create different dummy indicators for indicating high or low concentration and create quantiles of aid concentration levels. Aid concentration can be regarded as the relative aid spending per capita of a district compared to the aid spending per capita of other districts.

Omitting districts with no active projects in the measurement, high concentration refers to the top 25% and low concentration refers to the bottom 25% percentiles of aid concentration. I also create quantiles of concentration levels, again omitting districts with no active projects in the assignment of quantiles.

Here I must assume that the data I have on aid projects is well-represented of all active projects. If not, then I clearly have a misspecification, as I assign concentration levels based on the number of active projects per capita relative to other districts.

CHAPTER 6

PRELIMINARY FINDINGS

The preliminary findings for each empirical strategy outlined in Section 5 is discussed below. A summary of the preliminary findings is presented in Table 6.1.

Table 6.1: Summary of Preliminary Findings for Hypotheses

Hypothesis	Preliminary Finding
Hypothesis 1: Aggregated aid projects have a positive effect on conflict violence	Rejected
Hypothesis 2: Different aid-sector-based projects have the same effect on violence	Rejected
Hypothesis 3: Different levels of aid concentration have the same effect on conflict violence	Rejected

6.1 Hypothesis 1

Using the estimation strategy for testing Hypothesis 1 from Section 5.2, I discuss my preliminary findings.

As seen in Tables 10.1, 10.2, and 10.3, preliminary findings for Hypothesis 1 indicate predominately supporting, but a few contradicting results. Considering these conflicting preliminary findings, Hypothesis 1 is rejected.

Supporting Hypothesis 1, for a given month, if at least one development project is active in a district, the number of conflict events significantly increase by 145%[1] (Table 10.1). Similarly, having at least one aid project active significantly increases the number of conflict death and civilian deaths (Table 10.2 and 10.3). Although insignificant, military deaths respond positively to having at least one aid project active as well. Furthermore, increasing budgets of aid projects significantly increases the number of conflict events and conflict deaths

However, the magnitude of projects can have implications on violence. Findings indicate that increases in the number of projects significantly reduce the occurrence of conflict events and the number of conflict deaths.

Therefore, some preliminary findings do support hypothesis 1, that development aid is a rent provoking more conflict and violence. A reason for why there are diverging results between my independent variables could be due to the fact

[1]A point estimate of .375 corresponds to $exp(.375) = 1.45$.

that the number of projects is not as appealing to rebels' movement or engagement in violence as compared to the actual monetary value of the aid projects in a district.

6.2 Hypothesis 2

Using the estimation strategy for testing Hypothesis 2 from Section 5.3, I discuss my preliminary findings.

As seen in Tables 10.4, 10.5, and 10.6, preliminary findings reject Hypothesis 2, for different aid sectors have different effects on conflict violence.

Having at least one agriculture or health project active in a district significantly reduces the occurrence of conflict events by more than 70% (Table 10.4). Contrasting, having one energy project significantly increases the chance of conflict events. More aid projects and more money spent on agricultural, health, or general budget sectors is a significantly effective tool in reducing conflict events from occurring. While increasing the number of education and energy projects have insignificant effects on violence.

As a result, different sector-based projects may be perceived as rents or even, certain sector-based projects are more effective in increasing the opportunity cost for violence than others.

Similar patterns rejecting hypothesis 2 are found if we are to examine the impact of various aid sector projects on conflict, military, and civilian deaths (Table 10.5 and 10.6). Different aid sectors affect conflict fatalities differently. Here, the presence of at least one agricultural, water, health, or general budget significantly reduce the number of conflict, military, and civilian deaths. While, the presence of at least one educational and energy project significantly increase the number of conflict, military, and civilian deaths.

Besides rejecting hypothesis 2, these preliminary findings indicate that certain aid sectors may be better at deterring violence than others. As a result, investing in agricultural, water, health, or general budget projects may increase the livelihoods of poorer individuals better and thus increase the opportunity cost for violence. Energy or education projects may not be as effective in increasing the opportunity cost and may be perceived as an attractive rent to be gained from violence.

Another explanation would be considering that education, energy, and agricultural projects are more fungible in nature.[2] This would mean that these education and energy projects are more likely not to have been executed effectively; their project funds may be diverted for other government initiatives. As a result, these projects are unable to increase the opportunity cost of violence due to poor oversight and government execution, rather than some inherent badness of improving education or energy resources.

[2]Although fungibility is not directly observed, it has been documented for these particular sectors and increasing conflict fatalities (Strandow 2014, Fezioglu 1998).

6.3 Hypothesis 3

Using the estimation strategy for testing hypothesis 3 from Section 5.4, I discuss my preliminary findings.

As seen in Tables 10.7, 10.8, and 10.9, preliminary findings reject hypothesis 3, for different levels of aid concentration affect conflict violence differently.

Although preliminary findings in hypothesis 1 indicate having at least one aid project increases the occurrence of conflict events, findings for hypothesis 3 add caveats. Being in the top quartile of having the largest aid project funds spent per person significantly reduces conflict events by 64%. The converse, or having the 25% lowest of these funds spent per person has an insignificant effect on conflict violence[3] Therefore in order to effectively reduce conflict, policymakers should increase their spending of aid projects per person. Although these quartiles are relative to the funding of other districts in a given time period, future studies could expand on this question further to examine thresholds of aid spending and their effects on violence.

In fact, aid concentration is found to be significantly parabolic in nature. We observe at the lowest 20% quantile of aid spending per capita[4], that lower levels of spending increase conflict violence. These lower levels of spending per person have an effect of significantly increasing conflict events by 255% more compared

[3]The lower 25% percentile and lowest quantile category excludes districts without any projects active.

[4]Again, excluding districts without any projects active

to districts without any projects. However, as aid concentrations increase to the 3rd quantile, the occurrence of violence only significantly increases by 156%. However, at the highest level of aid spending per person, the 5th quantile, the occurrence of violent events is reduced by 58%.

Hypothesis 3 is also rejected when examining aid concentration levels on conflict violence as determined by the number of conflict deaths or military and civilian deaths. Aid concentration quantiles on conflict deaths has a more statistically significant relationship. The inflection between the third and fourth quantile of the positive and negative effect of aid per capita spending is observed again. Coefficients for aid concentration levels on military and civilian deaths parallel sign associations from earlier findings, but are only significant for the first quantile of aid per capita spending.

Rejecting Hypothesis 3, these findings can provide explanation for the diverging conclusions in the conflict economics literature concerning the effects of aid on violence. Here, certain levels of aid project funds per capita have different consequences. For a given period, if low levels of spending per person are present in a district, these projects may not be effective enough to increase the opportunity cost for violence. Furthermore, these low levels of spending appear to do more harm for the perpetration of violence compared to when there are no projects present at all. Therefore, if policymakers wish to reduce conflict levels, higher levels of spending per person should be considered which may require more cross-development initiative coordination.

Other explanations for why higher levels of aid may reduce violence compared to lower levels of aid may be due to the level of security oversight of funds. Projects with lower levels of aid spending, when scaled by population, may be deemed less valuable to protect. In contrast, projects with high levels of aid spending may have more security, involvement, and actors in the execution of projects. With this, the possible rents of these aid project funds become less desirable.

CHAPTER 7

ROBUSTNESS TESTING

7.1 Overview

In order to reaffirm the strength or shortfalls of my preliminary findings, I choose to modify my empirical strategies for hypotheses 1, 2, and 3 by using a zero-inflated negative binomial model instead of a poisson with random effects model. The justification for the zero-inflated negative binomial can be seen in Table 7.1, which illustrates the remediation of adopting this particular estimator. More specific reasons for using a zero-inflated negative binomial model in reference to shortfalls in my data are discussed to a larger extent in Section 7.2 below.

It should be noted that I conduct estimations using a negative binomial with random effects model as well, but these findings are not included in this study for the zero-inflated negative binomial reveal better-fitting results.

Table 7.1: Statistical Problems Alleviated By Various Estimators

	Estimation Issue		
Estimator Type	Over Dispersion	Zero Inflation	Independence, Multilevel
Poisson, Random Effects			x
Negative Binomial, Random Effects	x		x
Zero-Inflated Negative Binomial (ZINB)	x	x	x, with robust standard errors

This section also includes a discussion for how conclusions for each hypothesis are reaffirmed with the new estimator. As seen in Table 7.2 below, the robustness check findings echo earlier preliminary findings in rejection for all three hypotheses.

Table 7.2: Summary of Preliminary vs. Robustness Test Findings for Hypotheses

Hypothesis	Preliminary Finding	Robustness Test Finding
Hypothesis 1: Aggregated aid projects have a positive effect on conflict violence	Rejected	Rejected
Hypothesis 2: Different aid-sector-based projects have the same effect on violence	Rejected	Rejected
Hypothesis 3: Different levels of aid concentration have the same effect on conflict violence	Rejected	Rejected

7.2 Overdispersion and Zero-Inflation

The dependent variables used in this study violate the mean equals variance assumption required for unbiased poisson estimations. Examining Figure 7.1 and 7.2 while taking into consideration Tables 4.1-4.4, the data for each of the count variables is heavily skewed right. For the conflict event data, the variance of 2.03 is roughly 3 times larger than the mean, .68. Similarly for the conflict death data, the variance of 58.42 is over 35 times larger than the mean, 1.59.

Additionally, unlike the assumed Poisson distribution, the conflict data has a much larger than expected number of observed ”zeros.” As seen in Figure 7.1 and 7.2, the data it is ”zero-inflated” which means using a poisson-distribution based estimator is incorrect.[1]

These clear violations of the mean equals variance assumptions and thus call upon searching for a better estimator than the poisson with random effects model.

Other ways to check for this violation is to compare the estimates of a poisson with random effects to a negative binomial with random effects regression.[2] The two regressions should yield similar results if the mean equals variance requirement is held. However, I find this not to be the case causing speculation

[1] Arcand (2010) does not elaborate how this affects his study and does not provide histogram distributions.

[2] The negative binomial estimation relaxes the mean-variance requirement, and still is able to maintain characteristics of the poisson model such as discrete and non-negative events (Hausman et al. 1984).

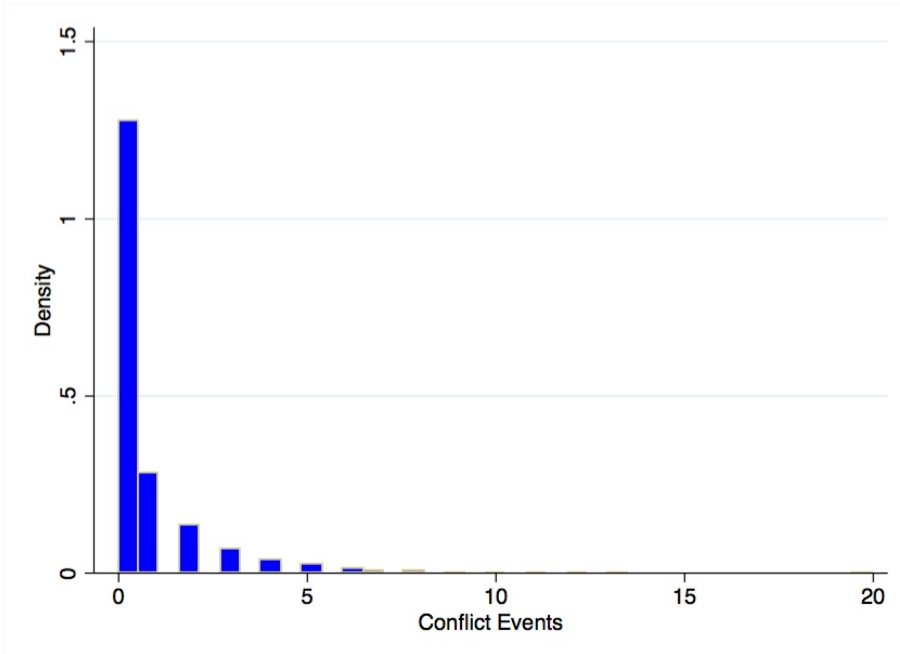

Figure 7.1: Distribution of Conflict Events

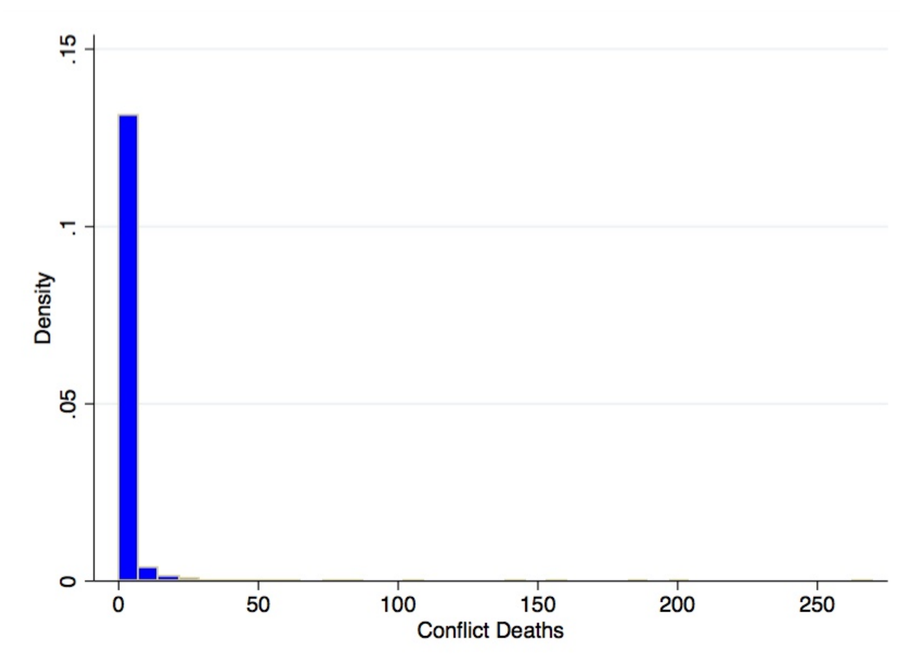

Figure 7.2: Distribution of Conflict Deaths

of the integrity of my preliminary findings.

Another way to test the strength of the fit of a model, particularly when comparing a poisson model, a negative binomial model, or a zero-inflated negative binomial is to compare its akaike information criterion (AIC) and the Bayesian information criterion (BIC).[3] Given the same parameters, smaller values of these statistics illustrate which estimator is a better fit for the data.

[3]This is where $AIC = -2 \cdot \ln(\hat{L}) + 2 \cdot k$ and $BIC = \ln(n)k - 2\ln(\hat{L})$. Here, k stands for the number of model parameters, $\hat{L}$ for maximized value of the likelihood function of the model, and n for the number of data points.

7.3 Hypothesis 1

In order to evaluate the strength of my preliminary findings for hypothesis 1, I replicate my empirical strategy but replace the poisson with random effects estimator with a zero-inflated negative binomial estimator.

Considered the better fitting model comparing the AIC and BIC values in Tables 10.1-10.3, the zero-inflated negative binomial *overwhelmingly rejects* Hypothesis 1. Rather than aid provoking more violence, all coefficients associated with the aggregated aid for my eight estimations are negative and significant or positive and insignificant.

Development aid, when considered at the aggregate level, actually deters or has no effect on conflict violence.

Compared to the preliminary result of a 145% increase, the zero-inflated negative binomial finds that by having at least on development aid project active, the number of conflict events significantly decreases by 9% (Table 13).

The zero-inflated negative binomial model indicates that the previous estimations may have had biased estimations due to the zero-inflated nature of the parameters and the variance exceeding the mean of the four dependent variables.

7.4 Hypothesis 2

In order to evaluate the strength of my preliminary findings for Hypothesis 2, I replicate my empirical strategy but replace the poisson with random effects estimator with a zero-inflated negative binomial estimator.

Echoing earlier findings, the better-fitting zero-inflated negative binomial model also rejects hypothesis 2. Each aid sector exhibits statistically significant results for how these aid-sector-based projects affect conflict violence. Conducting t-tests while comparing the aid-sector coefficients reiterates this finding.A

Different aid-sector-based projects have different effects on violence whereby the some aid-sector based projects reduce violence or have no effect on violence.

Similar to the preliminary results, the zero-inflated negative binomial estimator finds having at least one agricultural or water project active in a district significantly reduces the occurrence of conflict events. Compared to earlier findings of around 70%, the magnitude of the impact is found to be much smaller at around 28% (Table 10.4). Also, general budget aid projects significantly reduce conflict events by 17% as opposed to earlier findings of 50%. As a result, agricultural, water, and general budget projects are overall the most effective at increasing the opportunity cost to rebel and thus deterring violence. Increasing the number of health or general budget projects reduces the occurrence of conflict events, but the presence of only one active project has no impact.

Education projects are ineffective at raising the opportunity cost for they have a 110% significant positive effect on conflict events. Additionally, education projects significantly increase the number of conflict deaths. Education projects are considered rents and perhaps are not effective at raising the opportunity cost to rebel. Water, health, and general budget projects may be effective in raising the opportunity cost to rebel for they have a significant negative impact on conflict deaths (Table 10.5).

It should be noted that the presence of one education, agriculture, water, health, or general budget project has varying effects on military and civilian deaths (Table 10.6). Education and health projects significantly reduce the number of military deaths while energy projects increase the number of military deaths. Further, water projects significantly reduce the number of civilian deaths.

7.5 Hypothesis 3

In order to evaluate the strength of my preliminary findings for Hypothesis 3, I replicate my empirical strategy but replace the poisson with random effects estimator with a zero-inflated negative binomial estimator.

Echoing earlier findings, the better-fitting zero-inflated negative binomial model also rejects hypothesis 3. The level of aid per capita has significant and differing effects on violence.

When a district receives aid spending per capita that is in the bottom 25% percentile compared to other districts, it has a significant 49.7% increase in conflict events. However if a district receives aid spending per capita in the 4th or 5th percentile, there is a significant decrease in conflict events by 220% and 170% respectively (Table 10.7).

Examining Tables 10.8 and 10.9, aid concentration has an overwhelming insignificant impact on the number of conflict deaths, military deaths, and civilian deaths. However these three dependent variables follow the same trend as before with a parabolic relationship of aid concentration on violence. Coefficients for lower levels of aid concentration have positive signs and coefficients for higher levels of aid concentration with negative signs.

7.6 Additional Checks

In order to effectively reaffirm the strength of my findings I conduct the following exercises. I evaluate the strength of conclusions found for Hypothesis 1 by lagging aggregated aid, examining events where rebels move first, and scaling violence by population.

7.6.1 Lagging Aggregated Aid and Hypothesis 1

To reaffirm the strength of hypothesis 1, I perform a robustness check where I lag my three aggregated aid parameters (the having at least one project dummy, the total number of projects, and the logged total project funds) and regress them separately on conflict events or conflict deaths.

By doing so, I can see if the treatment of prior aid may have an effect on conflict and thus further justify the causal strength of the relationship between aid and conflict. In doing so, I am able to take into consideration time elements which may delay the impact of development aid on possible conflict or violence. For instance, rebels may not move to a certain locality in the same month period for they may not be aware of the existence of a project. Further, citizens may not reap the benefits of anti-poverty programs in a one month time span.

When lagging the dummy for having had at least one aid project by 3 months, 6 months, and 12 months, I find that having at least one aid project in any of the prior time periods reduces conflict fatalities and events, months later. Similarly, increasing the number of projects or total funds of projects in a prior time periods reduces conflict fatalities and events, in subsequent time periods months. These findings do not change, but rather reaffirm the rejection of hypothesis 1.

Earlier in Section 7, I found that having a least one aid project had no impact on conflict fatalities (Table 10.2). I find in this lagging exercise that having at least one aid project in a prior time period does have a significant impact on conflict deaths. Therefore, further considerations for time may be crucial when considering the effectiveness of aid and which time period to consider when measuring its impact.

7.6.2 Deaths and Events Where Rebels Move First and Hypothesis 1

Hypothesis 1 is based off an assumption and study that claims rebels initiate violence in ideological conflict.[4] As a result, I check to see if in the case where rebels are actually the ones initating conflict that hypothesis 1 holds. In order to do this, I create a new dependent variable for events where rebels are considered the aggressive side and literally ”move first” or perpetrate conflict.[5] I sum the number of rebel perpetrated events and fatalities from rebel perpetrated events

[4] Arcand et al. (2010) creates a framework for this and solves the first order condition claiming that the rebel-initiated movements cause development aid to increase violence.

[5] One of the benefits of the Uppsala Dataset is that it provides this information for each conflict event.

and index them appropriately by district i in month time period t. I then use these two rebel-initiating variables as new dependent variables and follow the rest of the empirical strategy for hypothesis 1.

As seen in Table 10.10, having at least one development project present increases the number of rebel-initiated conflict events, supporting hypothesis 1. Although the presence of a one aid project induces a significant 125% increase in rebel-initiated conflict events, there is no significant change in conflict deaths from these events (Table 10.11).

Overall, aggregated aid either has a positive significant or insignificant effect on conflict violence. Therefore this supports hypothesis 1 indicated that aid does increase more violence caused by rebels specifically due to it being seen as a rent. However overall, aid reduces violence indicating the converse: Governments are less likely to go to areas with aid projects perhaps due to perceived stability and the effectiveness of development aid to increase the opportunity cost to rebel.

7.6.3 Population and Hypothesis 1

I consider the proposition that higher levels of fatalities could be a function of population size and argue here that this is not the case. It should be noted from Table 4.5 and Figure 7.3 that there is a little correlation between the population of a district and the number of conflict events or deaths it endures. Additionally there is little correlation between a district's total number of development projects and its population (Figure 7.4).

Although these estimations are not included in the paper, I re-estimate the empirical strategy for Hypothesis 1 but include the 2001 population in the regression.

My findings do not change and the population parameter is insignificant. With the inclusion of this parameter I find for instance that by increasing the number of aid projects, the number of conflict events significantly decrease.

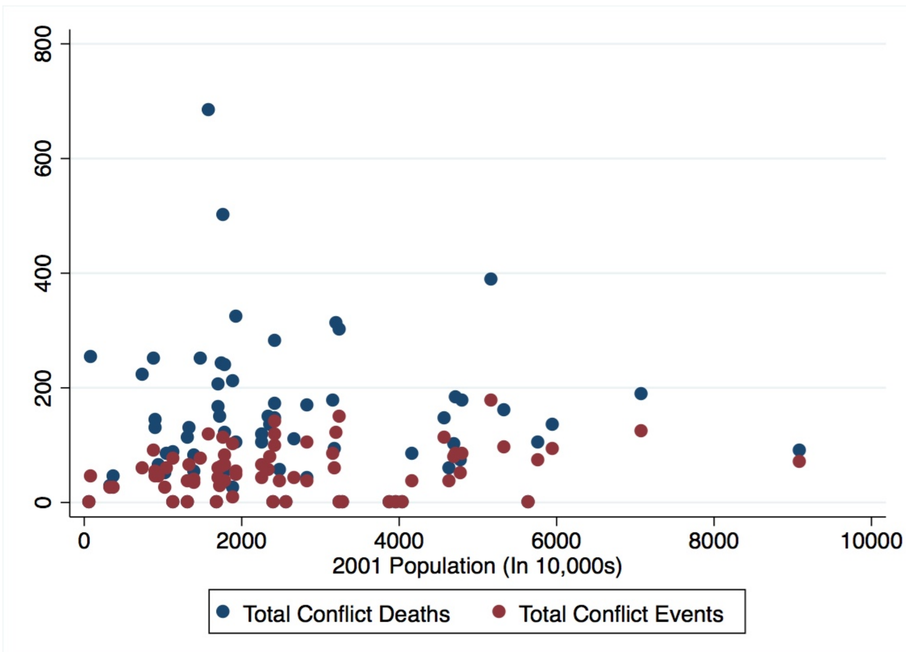

Figure 7.3: Total Conflict Deaths and Events on 2001 Population (in 10,000s) at the District-Level

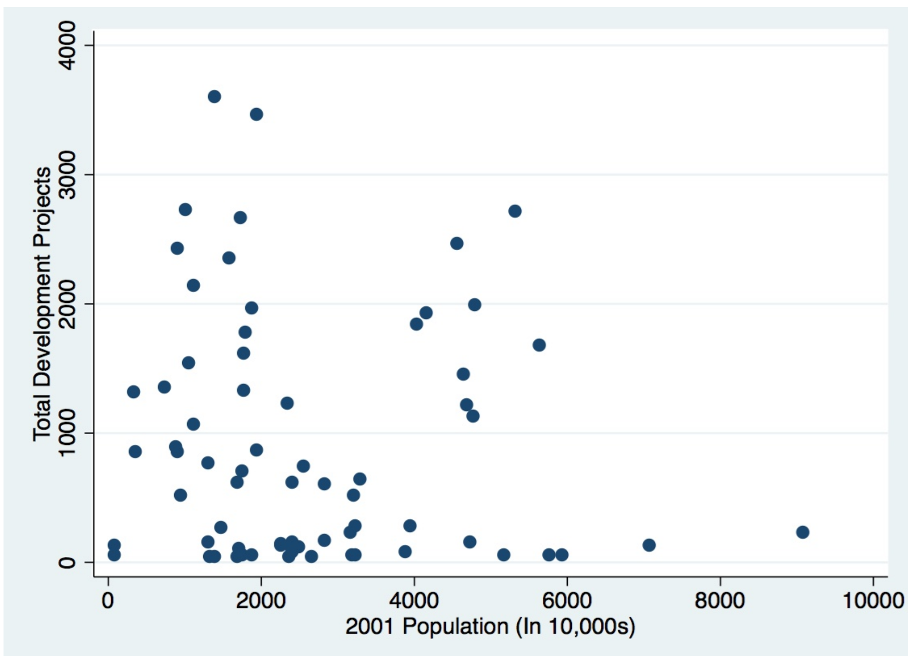

Figure 7.4: Total Development Projects on 2001 Population (in 10,000s) at the District-Level

CHAPTER 8

ROBUST TESTING: TWO STAGE LEAST SQUARES RESULTS

8.1 Overview

To support the strength of my findings from the zero-inflated models and to determine if they are causal, I further test them with a two least squares (2SLS) comparison. Here, I do a first stage regression using unbalanced socio-economic characteristics on the assignment of aid. I then use these predicted aid levels to then be plugged into my original three zero-inflated negative binomial models as described in Section 5.

The first stage least squares model differs by the corresponding aid dependent variable. For instance, the treatment of aid (Y=1, N=0) uses a logistic regression with random effects, while the total number of aids projects uses a poisson regression with random effects, and lastly the logistic total of aid funds uses a log linear model with random effects.

The hypotheses 2 and 3 are still are rejected, however the effects found of aid are differed in the 2SLS model. Hypothesis 1 is found to be inconclusive. For instance, at the aggregated level although predominately negatively signed, there is no significant effect of development aid on conflict under the 2SLS zero-inflated negative binomial model estimation compared to the prior zero-inflated negative binomial model. Therefore hypothesis 1 cannot be supported or rejected as I fail to find evidence in either case. Further all sectors of aid besides education, agriculture, and general budget show no effect on conflict violence. Lastly, the earlier observed effects of aid concentration on conflict violence are not as prominent in the 2SLS estimation.

A comparison of my hypotheses findings under the preliminary, robustness testing, and the 2SLS estimations is summarized in Table 8.1. All hypotheses are still rejected, but many earlier findings such as those discussed above the significant levels of concentrations on conflict are no longer valid.

Table 8.1: Summary of Preliminary vs. Robustness Test vs. Two-Stage Least Squares Findings for Hypotheses

Hypothesis	Preliminary Finding	Robustness Test Finding	Two-Stage Least Squares Testing Finding
Hypothesis 1: Aggregated aid projects have a positive effect on conflict violence	Rejected	Rejected	Inconclusive
Hypothesis 2: Different aid-sector-based projects have the same effect on violence	Rejected	Rejected	Rejected
Hypothesis 3: Different levels of aid concentration have the same effect on conflict violence	Rejected	Rejected	Rejected

8.2 Hypothesis 1

Under the 2SLS estimations, the coefficient estimates associated with aggregate aid: having at least one project, the total number of projects, and the total logged project funds reveal insignificant coefficients (Tables 10.12-10.14). The estimates are still negative, besides a positive coefficient relating the number of projects on conflict death levels. Therefore I fail to find any significant effects that would support or disprove Hypothesis 1.

One thing to note however is comparing the AIC and BIC values of the zero inflated negative binomial model and the 2SLS version, they are relatively the same as compared to the previous poisson with random effects and zero inflated negative binomial model which had a difference of around 5000. Therefore I am confident in the fit of the 2SLS estimation and its subsequent results.

8.3 Hypothesis 2

Under the 2SLS, the significance and signs of coefficients associated with various types of aid sectors switches signs and significant levels. As earlier comparing the AIC and BIC values of the 2SLS zero inflated negative binomial model and the previously estimated zero-inflated negative binomial model, I am confident in the fit of the 2SLS estimation due to the similar criterion values (Tables 10.15-10.17).

The major findings that remain or revealed under the 2SLS estimation are the following, I can argue that they are causal:

1. Education Projects

   Increasing the number of education projects increases conflict deaths and events

   Increasing education aid funds increases the number of conflict deaths

2. Agriculture Projects

   Having at least one agriculture project significantly increases conflict events and civilian deaths

   Increasing agriculture aid funds increases the number of conflict events

3. General Budget Projects

   Increasing the total number of projects significantly reduces conflict events

Increasing general budget aid funds reduces the number of conflict events and conflict deaths

8.4 Hypothesis 3

Under the 2SLS model, most of my previously significant coefficients associated with concentration became insignificant. Furthermore, I only did 2SLS on the measures for the dummies of having high concentrations of aid and having low concentrations of aid. The only significant finding is that higher concentrations of aid significantly reduce civilian deaths (Table 10.18-10.20).

We still see the inversion of the signs of the coefficients as earlier: there are differing effects of high concentrations of aid compared to low concentration of aid on conflict events. Whereby, higher concentrations have a positive coefficient and lower concentrations of aid have a negative coefficient when regressed with conflict events. However, these coefficients are insignificant. This inversion of signs is revealed for military and civilian deaths as well. Higher concentrations of aid have a negative sign associated with military deaths and civilian deaths (only coefficient significant). Lastly, lower concentrations of aid have a positive sign associated with military deaths and civilian deaths.

In contrast to earlier where concentration followed the inversion pattern on conflict deaths, the 2SLS regressions reveal both high and low concentrations to have a negative insignificant effect on conflict deaths.

CHAPTER 9

CONCLUSION

The motivation for this study is to examine the relationship between development aid and conflict. In doing so, this study can contribute to the current debate if aid is an encourager or deterrent for violence. The study had three research questions with three corresponding hypotheses regarding the effects of aggregated aid, sector-based aid, and aid concentration on violence. The study examined violence by measuring total conflict events, conflict deaths, military deaths, and civilian deaths.

First the study examined these phenomena using a poission with random effects model, but then corrected for zero-inflation and overdispersion by adopting a zero-inflated negative binomial model. Further, the study then tried to establish causality by comparing the zero-inflated negative binomial model with a 2SLS estimation having controlled for unbalanced socio-economic factors.

All three hypotheses were not supported or rejected in this study. Development aid at the aggregate level does not appear to increase violence, but has an insignificant negative effect on the level of conflict events and military, civilian and conflict deaths. Ultimately, I fail to find significant support that would support or disprove Hypothesis 1. Further, various aid sectors affect violence differently which calls into question the fungibility, quality of execution, and ability of projects to combat poverty. For instance, education projects and agricultural-based projects have a significant positive effect on violence, while general budget aid reduce violence. Therefore future studies may be able to delve into the characteristics of these projects as opposed to general budget projects which significant reduce violence, to understand better aid execution.

One of the most interesting findings indicate that higher levels of aid spending per capita reduces violence compared to areas with lower levels of aid spending per capita which experience greater levels of violence. The inversion of the signs is still found in the 2SLS specification and is significant when looking at the impact of high concentrations of aid on reducing conflict civilian deaths. Explanations for this observed phenomena may be due to security oversight or possible accumulation of resources or coordination of donors. Therefore future studies may be interested in investigating this inflection point, where a certain level of aid money per aid recipient may lower violence levels.

Another interesting finding is that although aid is seen to negatively affect violence, its presence increases the number of rebel-initiated events. Therefore the effects of aid on a conflict may inherently vary based on the amount rebels versus governments move. Here, the Nepalese Civil War had more conflict events initiated by the government, washing out the positive effect aid had on rebel-originated violence.

Future studies should look into characteristics of aid projects, such as the donor level or assessments of the quality of aid projects. Additionally, although this study provides a rich unique dataset of Nepal never before compiled, it could be strengthened with the incorporation of more exogenous geographical and meteorological parameters. These parameters could be considered in future projects to create stronger findings relating aid and conflict. Being one of the few quantitative studies linking development aid on conflict in Nepal, this study is a contribution to the hole in the South Asian literature.

CHAPTER 10

APPENDIX 1: ESTIMATIONS

Hypothesis 1

Below are the estimations examining aggregated aid projects on conflict violence for Hypothesis 1. The estimations use the empirical strategy outlined in Section 5.2:

- *Table 10.1* Aggregated Aid on Conflict Events
- *Table 10.2* Aggregated Aid on Conflict Deaths
- *Table 10.3* Aggregated Aid on Military and Civilian Deaths

Table 10.1: Aggregated Aid on Conflict Events

	Poison, Random Effects			Zero-Inflated Negative Binomial Model		
	Conflict Events					
	(1a)	(1b)	(1c)	(2a)	(2b)	(2c)
Any Project Active? (Y=1, N=0)	0.375***			-0.0939*		
	(10.73)			(-2.21)		
Total Number of Active Aid Projects		-0.00920***			-0.00455***	
		(-8.39)			(-4.59)	
Log Total Active Aid Project Funds			0.0174***			-0.0104***
			(6.73)			(-3.45)
Log District GDP	0.350	0.311	0.360	0.151***	0.131***	0.146***
	(1.05)	(0.94)	(1.08)	(4.02)	(3.49)	(3.90)
District per capita income	-5.559	-6.115	-5.622	-0.745	-1.440	-0.470
	(-0.65)	(-0.72)	(-0.65)	(-0.45)	(-0.84)	(-0.28)
Log District Development Budget	-0.116	-0.119	-0.125	-0.0465	-0.0426	-0.0416
	(-0.42)	(-0.43)	(-0.45)	(-1.44)	(-1.32)	(-1.28)
Gini	-0.0174	-0.167	-0.0112	0.0000398	-0.0117	-0.0315
	(-0.03)	(-0.25)	(-0.02)	(0.00)	(-0.15)	(-0.40)
Constant	-1.177	-0.383	-1.019	0.500	0.580	0.481
	(-0.32)	(-0.11)	(-0.28)	(1.15)	(1.33)	(1.10)
Observations	5796	5796	5796	5796	5796	5796
Districts	69	69	69	69	69	69
AIC	13501.7	13542.8	13573.7	6400.9	6390.0	6393.1
BIC	13548.4	13589.5	13620.3	6460.9	6450.0	6453.1
LL	-6743.8	-6764.4	-6779.8	-3191.4	-3186.0	-3187.6

t statistics in parentheses, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Robust Standard Errors, Poisson with random effects for Columns 1a-1c, Zero-Inflated Negative Binomial for Columns 2a-2c

Table 10.2: Aggregated Aid on Conflict Deaths

	Poison, Random Effects			Zero-Inflated Negative Binomial Model		
	Conflict Deaths					
	(1a)	(1b)	(1c)	(2a)	(2b)	(2c)
Any Project Active? (Y=1, N=0)	0.426**			0.0573		
	(3.19)			(0.58)		
Total Number of Active Aid Projects		-0.00976***			-0.00217	
		(-3.55)			(-0.69)	
Log Total Active Aid Project Funds			0.0193*			-0.000672
			(2.11)			(-0.09)
Log District GDP	0.266	0.210	0.277	0.0184	0.0155	0.0242
	(0.94)	(0.76)	(0.98)	(0.20)	(0.17)	(0.27)
District per capita income	-4.826	-5.435	-4.923	-0.0443	-0.213	0.0225
	(-1.03)	(-1.12)	(-1.04)	(-0.01)	(-0.04)	(0.00)
Log District Development Budget	-0.256	-0.251	-0.266	-0.165*	-0.164*	-0.168*
	(-1.27)	(-1.25)	(-1.31)	(-2.25)	(-2.19)	(-2.26)
Gini	-0.652	-0.855	-0.646	-0.600**	-0.629**	-0.616**
	(-1.49)	(-1.77)	(-1.44)	(-2.62)	(-2.69)	(-2.69)
Constant	3.338	4.201	3.546	4.935***	5.022***	4.993***
	(1.48)	(1.80)	(1.55)	(4.86)	(4.82)	(4.86)
Observations	5796	5796	5796	5796	5796	5796
Districts	69	69	69	69	69	69
AIC	36940.5	37062.6	37152.5	9746.9	9746.3	9747.8
BIC	36987.2	37109.3	37199.2	9806.9	9806.3	9807.8
LL	-18463.3	-18524.3	-18569.3	-4864.5	-4864.1	-4864.9

t statistics in parentheses, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Robust Standard Errors, Poisson with random effects for Columns 1a-1c, Zero-Inflated Negative Binomial for Columns 2a-2c

Table 10.3: Aggregated Aid on Military and Civilian Deaths

	Poison, Random Effects			Zero-Inflated Negative Binomial Model		
	Conflict Deaths	Military Deaths	Civilian Deaths	Conflict Deaths	Military Deaths	Civilian Deaths
	(1a)	(1b)	(1c)	(2a)	(2b)	(2c)
Any Project Active? (Y=1, N=0)	0.426**	0.446	0.433*	0.0573	0.00111	-0.0443
	(3.19)	(1.50)	(2.26)	(0.58)	(0.01)	(-0.36)
Log District GDP	0.266	0.473	0.516*	0.0184	0.212	0.349***
	(0.94)	(0.98)	(2.03)	(0.20)	(1.05)	(3.95)
District per capita income	-4.826	-4.440	-7.604	-0.0443	1.317	-3.460
	(-1.03)	(-0.69)	(-1.83)	(-0.01)	(0.19)	(-0.85)
Log District Development Budget	-0.256	-0.296	-0.173	-0.165*	-0.190	-0.125
	(-1.27)	(-1.06)	(-1.06)	(-2.25)	(-1.40)	(-1.95)
Gini	-0.652	-0.842	-0.363	-0.600**	-0.728	-0.285
	(-1.49)	(-1.05)	(-0.59)	(-2.62)	(-1.38)	(-1.09)
Constant	3.338	0.555	-2.131	4.935***	1.948	-0.320
	(1.48)	(0.23)	(-1.03)	(4.86)	(1.04)	(-0.32)
Observations	5796	5796	5796	5796	5796	5796
Districts	69	69	69	69	69	69
AIC	36940.5	8894.8	8815.5	9746.9	3267.1	4821.0
BIC	36987.2	8941.4	8862.2	9806.9	3327.1	4881.0
ll	-18463.3	-4440.4	-4400.8	-4864.5	-1624.5	-2401.5

t statistics in parentheses, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Robust Standard Errors, Poisson with random effects for Columns 1a-1c, Zero-Inflated Negative Binomial for Columns 2a-2c

Hypothesis 2

Below are the estimations examining aid-sector-based projects on conflict violence for Hypothesis 2. The estimations use the empirical strategy outlined in Section 5.3:

- *Table 10.4* Aid Sectors on Conflict Events
- *Table 10.5* Aid Sectors on Conflict Deaths
- *Table 10.6* Aid Sectors on Military and Civilian Deaths

Table 10.4: Aid Sectors on Conflict Events

	Poison, Random Effects			Zero-Inflated Negative Binomial Model		
	Conflict Events					
	(1a)	(1b)	(1c)	(2a)	(2b)	(2c)
Education Project Active? (Y=1, N=0)	1.502			0.103*		
	(1.55)			(2.45)		
Agriculture Project Active? (Y=1, N=0)	-1.122***			-0.311***		
	(-9.94)			(-4.22)		
Water Project Active? (Y=1, N=0)	-0.641*			-0.287***		
	(-2.40)			(-4.36)		
Health Project Active? (Y=1, N=0)	-1.371*			-0.305		
	(-2.16)			(-1.45)		
General Budget Project Active? (Y=1, N=0)	-0.763***			-0.181***		
	(-6.06)			(-3.75)		
Energy Project Active? (Y=1, N=0)	0.446***			-0.0695		
	(3.40)			(-1.66)		
Total Number of Active Education Projects		0.0754			0.00391	
		(1.06)			(1.51)	
Total Number of Active Agriculture Projects		-1.123***			-0.298***	
		(-9.28)			(-4.13)	
Total Number of Active Water Projects		-0.269			-0.237***	
		(-0.90)			(-4.21)	
Total Number of Active Health Projects		-1.510**			-0.386*	
		(-2.79)			(-2.17)	
Total Number of Active General Budget Projects		-0.0144***			-0.00316*	
		(-3.42)			(-2.51)	
Total Number of Active Energy Projects		0.113			-0.112***	
		(1.01)			(-3.30)	
Log. Total Education Aid Project Funds			0.117			0.00782*
			(1.53)			(2.43)
Log. Total Agriculture Aid Project Funds			-0.0848***			-0.0237***
			(-9.67)			(-4.19)
Log. Total Water Aid Project Funds			-0.0388			-0.0205***
			(-1.92)			(-4.52)
Log. Total Health Aid Project Funds			-0.0894*			-0.0210
			(-2.28)			(-1.60)
Log General Budget Aid Project Funds			-0.0549***			-0.0130***
			(-6.07)			(-3.87)
Log. Total Energy Aid Project Funds			0.0399**			-0.00726
			(2.91)			(-1.93)
Constant	-3.804	-2.530	-3.835	-0.261	-0.679	-0.350
	(-1.56)	(-1.39)	(-1.62)	(-0.56)	(-1.28)	(-0.74)
Observations	5796	5796	5796	5796	5796	5796
Districts	69	69	69	69	69	69
AIC	12684.9	13025.3	12704.1	6337.3	6340.0	6334.8
BIC	12764.9	13105.3	12784.1	6430.6	6433.4	6428.1
LL	-6330.4	-6500.7	-6340.1	-3154.6	-3156.0	-3153.4

t statistics in parentheses, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Robust Standard Errors, Poisson with random effects for Columns 1a-1c, Zero-Inflated Negative Binomial for Columns 2a-2c

Table 10.5: Aid Sectors on Conflict Deaths

	Poison, Random Effects			Zero-Inflated Negative Binomial Model		
	Conflict Deaths					
	(1a)	(1b)	(1c)	(2a)	(2b)	(2c)
Education Project Active? (Y=1, N=0)	1.846***			0.384**		
	(5.45)			(3.03)		[1em]
Agriculture Project Active? (Y=1, N=0)	-1.010***			-0.134		
	(-4.78)			(-0.79)		
Water Project Active? (Y=1, N=0)	-1.303***			-0.676**		
	(-4.15)			(-3.19)		
Health Project Active? (Y=1, N=0)	-2.225**			-1.103***		
	(-3.04)			(-4.89)		
General Budget Project Active? (Y=1, N=0)	-0.911***			-0.296*		
	(-3.61)			(-2.19)		
Energy Project Active? (Y=1, N=0)	0.501***			-0.0264		
	(3.78)			(-0.29)		
Total Number of Active Education Projects		0.0852***			0.0166	
		(4.39)			(1.86)	
Total Number of Active Agriculture Projects		-1.037***			-0.118	
		(-4.58)			(-0.66)	
Total Number of Active Water Projects		-0.886*			-0.468**	
		(-2.13)			(-3.19)	
Total Number of Active Health Projects		-2.398***			-1.149***	
		(-3.97)			(-6.30)	
Total Number of Active General Budget Projects		-0.0119			-0.00315	
		(-1.83)			(-0.74)	
Total Number of Active Energy Projects		0.0709			-0.195*	
		(0.62)			(-2.48)	
Log. Total Education Aid Project Funds			0.140***			0.0294**
			(5.63)			(2.88)
Log. Total Agriculture Aid Project Funds			-0.0764***			-0.0107
			(-4.64)			(-0.81)
Log. Total Water Aid Project Funds			-0.0863***			-0.0478***
			(-3.79)			(-3.33)
Log. Total Health Aid Project Funds			-0.146**			-0.0741***
			(-3.22)			(-5.43)
Log. General Budget Aid Project Funds			-0.0647***			-0.0212*
			(-3.71)			(-2.08)
Log. Energy Aid Project Funds			0.0456***			-0.00255
			(3.37)			(-0.31)
Constant	-0.0563	1.227	-0.171	3.071**	2.475	2.854*
	(-0.02)	(0.61)	(-0.08)	(2.79)	(1.93)	(2.49)
Observations	5796	5796	5796	5796	5796	5796
Districts	69	69	69	69	69	69
AIC	33706.3	35000.9	33801.7	9645.5	9666.3	9645.1
BIC	33786.3	35080.9	33881.7	9738.8	9759.6	9738.4
LL	-16841.1	-17488.5	-16888.9	-4808.8	-4819.1	-4808.6

t statistics in parentheses, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Robust Standard Errors, Poisson with random effects for Columns 1a-1c, Zero-Inflated Negative Binomial for Columns 2a-2c

Table 10.6: Aid Sectors on Military and Civilian Deaths

	Poison, Random Effects			Zero-Inflated Negative Binomial Model		
	Conflict Deaths (1a)	Military Deaths (1b)	Civilian Deaths (1c)	Conflict Deaths (2a)	Military Deaths (2b)	Civilian Deaths (2c)
Education Project Active? (Y=1, N=0)	1.846***	-0.944	1.113	0.384**	-0.720**	0.119
	(5.45)	(-0.81)	(0.97)	(3.03)	(-3.21)	(0.86)
Agriculture Project Active? (Y=1, N=0)	-1.010***	-0.380	-0.913***	-0.134	0.606	-0.0713
	(-4.78)	(-1.10)	(-4.20)	(-0.79)	(1.72)	(-0.44)
Water Project Active? (Y=1, N=0)	-1.303***	-0.800	-1.297***	-0.676**	-0.573	-0.720***
	(-4.15)	(-1.41)	(-3.39)	(-3.19)	(-1.41)	(-4.23)
Health Project Active? (Y=1, N=0)	-2.225**	-17.32***	-1.174***	-1.103***	-21.47***	-0.439
	(-3.04)	(-21.37)	(-5.36)	(-4.89)	(-33.62)	(-1.17)
General Budget Project Active? (Y=1, N=0)	-0.911***	-0.461	-0.649***	-0.296*	-0.159	-0.0763
	(-3.61)	(-1.37)	(-3.49)	(-2.19)	(-0.62)	(-0.71)
Energy Project Active? (Y=1, N=0)	0.501***	1.250***	0.725***	-0.0264	0.599**	0.0360
	(3.78)	(4.06)	(4.11)	(-0.29)	(3.10)	(0.40)
Log District GDP	-0.0245	0.233	0.210	-0.0892	0.0925	0.234*
	(-0.09)	(0.58)	(0.64)	(-0.97)	(0.50)	(2.31)
District per capita income	2.363	-8.248	-3.973	3.325	-2.636	-1.398
	(0.53)	(-1.01)	(-0.62)	(0.63)	(-0.39)	(-0.35)
Log District Development Budget	0.0453	-0.212	0.0731	-0.0177	-0.150	0.00212
	(0.23)	(-0.75)	(0.31)	(-0.23)	(-1.06)	(0.03)
Gini	-0.857*	-1.360	-0.792	-0.760***	-1.067*	-0.480
	(-2.08)	(-1.62)	(-1.36)	(-3.41)	(-2.11)	(-1.75)
Constant	-0.0563	1.403	-4.105	3.071**	2.330	-1.731
	(-0.02)	(0.43)	(-1.54)	(2.79)	(1.20)	(-1.76)
Observations	5796	5796	5796	5796	5796	5796
Districts	69	69	69	69	69	69
AIC	33706.3	8612.9	8471.6	9645.5	3238.8	4805.2
BIC	33786.3	8692.9	8551.5	9738.8	3332.1	4898.5
LL	-16841.1	-4294.5	-4223.8	-4808.8	-1605.4	-2388.6

t statistics in parentheses, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Robust Standard Errors, Poisson with random effects for Columns 1a-1c, Zero-Inflated Negative Binomial for Columns 2a-2c

Hypothesis 3

Below are the estimations examining levels of aid concentration on conflict violence for Hypothesis 3. The estimations use the empirical strategy outlined in Section 5.4:

- *Table 10.7* Aid Concentration on Conflict Events
- *Table 10.8* Aid Concentration on Conflict Deaths
- *Table 10.9* Aid Concentration on Military and Civilian Deaths

Table 10.7: Aid Concentration on Conflict Events

	Poisson, Random Effects			Zero-Inflated Negative Binomial Model		
	Conflict Events					
	(1a)	(1b)	(1c)	(2a)	(2b)	(2c)
Any Project Present? (Y=1, N=0)	0.375***			-0.0939*		
	(3.36)			(-2.21)		
High Concentration? (Y=1, N=0)		-1.035***			-0.0981	
		(-4.13)			(-1.29)	
Low Concentration (Y=1, N=0)		-0.0128			0.183***	
		(-0.09)			(4.42)	
1st quantile of project money per capita			0.936***			0.0672
			(6.74)			(1.22)
2st quantile of project money per capita		a	0.289			-0.140*
			(1.52)			(-2.39)
3rd quantile of project money per capita			0.445**			-0.0576
			(2.62)			(-0.97)
4th quantile of project money per capita			-0.252			-0.446***
			(-1.33)			(-6.73)
5th quantile of project money per capita			-0.871*			-0.258**
			(-2.14)			(-3.17)
Log District GDP	0.350	0.227	0.0541	0.151***	0.112**	0.0718
	(1.78)	(1.22)	(0.28)	(4.02)	(2.87)	(1.74)
District per capita income	-5.559	-0.548	2.194	-0.745	0.331	1.538
	(-1.59)	(-0.16)	(0.61)	(-0.45)	(0.19)	(0.89)
Log. District Development Budget	-0.116	-0.117	0.00494	-0.0465	-0.0311	0.0243
	(-0.80)	(-0.85)	(0.04)	(-1.44)	(-0.95)	(0.69)
Gini	-0.0174	-0.272	-0.419	0.0000398	-0.0914	-0.119
	(-0.05)	(-0.78)	(-1.10)	(0.00)	(-1.14)	(-1.46)
Constant	-1.177	0.266	-0.876	0.500	0.393	-0.171
	(-0.68)	(0.16)	(-0.51)	(1.15)	(0.88)	(-0.37)
Observations	5796	5796	5796	5796	5796	5796
Districts	69	69	69	69	69	69
AIC	13501.7	13466.2	13045.7	6400.9	6381.9	6363.0
BIC	13548.4	13519.5	13119.1	6460.9	6448.6	6449.7
LL	-6743.8	-6725.1	-6511.9	-3191.4	-3181.0	-3168.5

t statistics in parentheses, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Robust Standard Errors, Poisson with random effects for Columns 1a-1c, Zero-Inflated Negative Binomial for Columns 2a-2c

Table 10.8: Aid Concentration on Conflict Deaths

	Poisson, Random Effects			Zero-Inflated Negative Binomial Model		
	Conflict Deaths					
	(1a)	(1b)	(1c)	(2a)	(2b)	(2c)
Any Project Present? (Y=1, N=0)	0.426**			0.0573		
	(3.19)			(0.58)		
Log. District GDP	0.266	0.160	-0.0656	0.0184	-0.00762	-0.103
	(0.94)	(0.59)	(-0.25)	(0.20)	(-0.08)	(-1.14)
District per capita income	-4.826	0.0970	4.224	-0.0443	1.699	4.529
	(-1.03)	(0.02)	(1.02)	(-0.01)	(0.31)	(0.84)
Log. District Development Budget	-0.256	-0.272	-0.0874	-0.165*	-0.162*	-0.0178
	(-1.27)	(-1.36)	(-0.48)	(-2.25)	(-2.16)	(-0.26)
Gini	-0.652	-0.977*	-1.125*	-0.600**	-0.723**	-0.748**
	(-1.49)	(-2.04)	(-2.38)	(-2.62)	(-3.06)	(-3.28)
High Concentration? (Y=1, N=0)		-1.126**			-0.213	
		(-3.10)			(-0.80)	
Low Concentration? (Y=1, N=0)		-0.0648			0.136	
		(-0.31)			(1.14)	
1st quantile of project money per capita			1.045***			0.266*
			(5.91)			(2.13)
2nd quantile of project money per capita			0.414			-0.0515
			(1.89)			(-0.42)
3rd quantile of project money per capita			0.708**			0.257
			(2.94)			(1.39)
4th quantile of project money per capita			-0.653**			-0.794***
			(-2.80)			(-5.99)
5th quantile of project money per capita			-0.815*			-0.176
			(-2.49)			(-0.69)
Constant	3.338	5.053*	3.019	4.935***	5.097***	3.130***
	(1.48)	(2.14)	(1.52)	(4.86)	(4.67)	(3.31)
Observations	5796	5796	5796	5796	5796	5796
Districts	69	69	69	69	69	69
AIC	36940.5	36749.1	35134.8	9746.9	9739.8	9670.0
BIC	36987.2	36802.4	35208.1	9806.9	9806.5	9756.6
LL	-18463.3	-18366.6	-17556.4	-4864.5	-4859.9	-4822.0

t statistics in parentheses, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Robust Standard Errors, Poisson with random effects for Columns 1a-1c, Zero-Inflated Negative Binomial for Columns 2a-2c

Table 10.9: Aid Concentration on Conflict Deaths

	Poisson, Random Effects				Zero Inflate Negative Binomial			
	Military Deaths		Civilian Deaths			Military Deaths	Civilian Deaths	
	(1a)	(1b)	(2a)	(2b)	(3a)	(3b)	(4a)	(4b)
High Concentration? (Y=1, N=0)	0.291		-1.320*		0.879		-0.367	
	(0.34)		(-2.43)		(1.61)		(-1.80)	
Low Concentration? (Y=1, N=0)	0.416		-0.0897		0.597**		0.0600	
	(1.49)		(-0.46)		(3.02)		(0.44)	
1st quantile of project money per capita		1.134***		1.008***		0.284		0.0458
		(4.04)		(4.71)		(1.17)		(0.40)
2nd quantile of project money per capita		0.514		0.477*		0.131		0.0284
		(1.40)		(2.19)		(0.46)		(0.23)
3rd quantile of project money per capita		-0.494		0.543		-0.657*		0.178
		(-0.96)		(1.52)		(-2.17)		(0.80)
4th quantile of project money per capita		-0.454		-0.463		-0.887***		-0.683***
		(-1.07)		(-1.52)		(-3.29)		(-3.56)
5th quantile of project money per capita		0.0563		-1.052		0.386		-0.420
		(0.07)		(-1.14)		(0.71)		(-1.93)
Log. District GDP	0.463	0.391	0.396*	0.217	0.280	0.213	0.306**	0.227*
	(0.98)	(0.72)	(2.07)	(1.04)	(1.41)	(1.04)	(3.15)	(2.23)
District per capita income	-3.719	-3.064	-1.780	1.048	0.157	0.880	-1.224	1.463
	(-0.47)	(-0.37)	(-0.42)	(0.22)	(0.02)	(0.12)	(-0.30)	(0.37)
Log. District Development Budget	-0.288	-0.255	-0.190	-0.0602	-0.125	-0.0677	-0.120	-0.0116
	(-1.10)	(-0.76)	(-1.33)	(-0.39)	(-0.86)	(-0.43)	(-1.87)	(-0.16)
Gini	-1.017	-1.538	-0.606	-0.812	-0.661	-1.011*	-0.338	-0.393
	(-1.46)	(-1.62)	(-1.00)	(-1.08)	(-1.40)	(-2.02)	(-1.24)	(-1.41)
Constant	0.539	0.866	-0.331	-1.624	-0.328	-0.222	-0.102	-1.498
	(0.25)	(0.30)	(-0.16)	(-0.62)	(-0.18)	(-0.11)	(-0.10)	(-1.43)
Observations	5796	5796	5796	5796	5796	5796	5796	5796
AIC	8920.3	8709.1	8785.2	8566.1	3255.7	3252.6	4817.5	4799.3
BIC	8973.6	8782.4	8838.5	8639.4	3322.4	3339.3	4884.1	4886.0
ll	-4452.1	-4343.5	-4384.6	-4272.1	-1617.9	-1613.3	-2398.8	-2386.7

t statistics in parentheses, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Robust Standard Errors, Poisson with random effects for Columns 1a-1c, Zero-Inflated Negative Binomial for Columns 2a-2c

Rebels Move First

Below are the estimations examining the effects of aid on rebel-initiated events and related deaths using the empirical strategy for hypothesis 1 and discussed in Section 8.6.3.

Table 10.10: Development Aid and Rebel Initiated Events

	Poisson, Random Effects			Zero-Inflated Negative Binomial Model		
				Conflict Events		
	(1a)	(1b)	(1c)	(2a)	(2b)	(2c)
Treatment	0.618***			0.228**		
	(4.62)			(2.90)		
Number of Projects		-0.0000257			0.0000143	
		(-0.18)			(0.56)	
Log Project Money			0.0290***			0.0136**
			(4.31)			(3.09)
Log District Total Income	0.737**	0.741***	0.747**	0.638***	0.658***	0.644***
	(2.80)	(3.35)	(2.97)	(7.96)	(8.03)	(8.03)
District per capita Income	-17.74	-17.81	-17.99	-17.58*	-17.10*	-17.70*
	(-0.29)	(-0.27)	(-0.28)	(-2.29)	(-2.20)	(-2.33)
Log District Development Budget	-0.218	-0.236	-0.224	-0.193**	-0.200**	-0.198**
	(-0.30)	(-0.33)	(-0.31)	(-3.07)	(-3.13)	(-3.16)
Gini	0.568	0.421	0.606	0.401*	0.367*	0.438*
	(0.63)	(0.47)	(0.65)	(2.36)	(2.16)	(2.56)
Constant	-4.174	-3.365	-4.101	-2.564**	-2.435**	-2.547**
	(-0.36)	(-0.28)	(-0.35)	(-2.86)	(-2.71)	(-2.85)
inflate						
treat_event				-22.20***	-21.16***	-22.26***
				(-37.79)	(-36.14)	(-38.77)
Constant				2.042***	2.073***	2.047***
				(19.73)	(20.52)	(19.86)
Observations	5796	5796	5796	5796	5796	5796
Districts	69	69	69	69	69	69
AIC	5658.2	5737.9	5679.5	4581.2	4589.9	4579.7
BIC	5704.8	5784.5	5726.2	4641.2	4649.9	4639.6
LL	-2822.1	-2861.9	-2832.8	-2281.6	-2285.9	-2280.8

t statistics in parentheses, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Robust Standard Errors, Poisson with random effects for Columns 1a-1c, Zero-Inflated Negative Binomial for Columns 2a-2c

Table 10.11: Development Aid and Deaths from Rebel Initiated Events

	Poisson, Random Effects			Zero-Inflated Negative Binomial Model		
	Conflict Deaths					
	(1a)	(1b)	(1c)	(2a)	(2b)	(2c)
Treatment	0.627***			0.169		
	(3.77)			(1.44)		
Number of Projects		-0.0000418			-0.0000243	
		(-0.67)			(-0.76)	
Log Project Money			0.0287***			0.00950
			(3.50)			(1.46)
Log District Total Income	0.810**	0.810**	0.819**	0.701***	0.717***	0.704***
	(2.75)	(3.01)	(2.81)	(6.87)	(6.72)	(6.87)
District per capita Income	-17.62	-17.96	-17.80	-16.48*	-17.15*	-16.57*
	(-0.49)	(-0.43)	(-0.47)	(-2.48)	(-2.33)	(-2.50)
Log District Development Budget	-0.251	-0.268	-0.256	-0.226**	-0.229**	-0.228**
	(-0.41)	(-0.46)	(-0.42)	(-3.03)	(-3.01)	(-3.06)
Gini	0.745	0.588	0.778	0.573**	0.554**	0.598**
	(0.97)	(0.81)	(0.98)	(2.92)	(2.80)	(3.01)
Constant	-4.179	-3.299	-4.090	-2.432*	-2.350*	-2.433**
	(-0.45)	(-0.36)	(-0.43)	(-2.57)	(-2.45)	(-2.58)
inflate						
treat_event				-27.88***	-25.19***	-28.26***
				(-75.16)	(-68.57)	(-77.54)
Constant				2.056***	2.070***	2.060***
				(19.08)	(19.50)	(19.18)
Observations	5796	5796	5796	5796	5796	5796
Districts	69	69	69	69	69	69
AIC	6388.5	6476.9	6416.8	4769.6	4772.6	4769.5
BIC	6435.2	6523.5	6463.4	4829.6	4832.5	4829.5
LL	-3187.3	-3231.4	-3201.4	-2375.8	-2377.3	-2375.7

t statistics in parentheses, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Robust Standard Errors, Poisson with random effects for Columns 1a-1c, Zero-Inflated Negative Binomial for Columns 2a-2c

2SLS Estimations

Below are estimations for Hypothesis 1, 2, and 3.

Table 10.12: 2SLS Estimations for the Effect of Aggregated Aid on Conflict Events

	Zero-Inflated Negative Binomial Models			2SLS Zero-Inflated Negative Binomial Model		
	Conflict Events					
	(1a)	(1b)	(1c)	(2a)	(2b)	(2c)
Any Project Present? (Y=1, N=0)	-0.0939*			-0.101		
	(-2.21)			(-1.47)		
Total Number of Active Aid Projects		-0.00455***			-0.0369	
		(-4.59)			(-1.24)	
Log Total Active Aid Project Funds			-1.76e-09			-0.0291
			(-1.31)			(-1.78)
Log. District GDP	0.151***	0.131***	0.143***	0.142***	0.137***	0.129***
	(4.02)	(3.49)	(3.81)	(3.76)	(3.62)	(3.31)
District per capita income	-0.745	-1.440	-0.832	0.118	-1.622	0.262
	(-0.45)	(-0.84)	(-0.50)	(0.07)	(-0.92)	(0.15)
Log District Development Budget	-0.0465	-0.0426	-0.0430	-0.0482	-0.0514	-0.0362
	(-1.44)	(-1.32)	(-1.33)	(-1.48)	(-1.59)	(-1.08)
Gini	0.0000398	-0.0117	-0.00742	-0.00755	0.0141	-0.0195
	(0.00)	(-0.15)	(-0.09)	(-0.09)	(0.18)	(-0.24)
Constant	0.500	0.580	0.443	0.559	0.726	0.636
	(1.15)	(1.33)	(1.02)	(1.28)	(1.55)	(1.45)
Observations	5796	5796	5796	5796	5796	5796
Districts	69	69	69	69	69	69
AIC	6400.9	6390.0	6405.1	6404.5	6404.6	6402.8
BIC	6460.9	6450.0	6465.0	6464.4	6464.6	6462.8
LL	-3191.4	-3186.0	-3193.5	-3193.2	-3193.3	-3192.4

t statistics in parentheses, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Robust Standard Errors, Zero-Inflated Negative Binomial Estimations for 1a-1c, 2a-2c are the two stage least squares results using a Zero-Inflated Negative Binomial as found in Table 11. 2a is the 2SLS estimation where the FSLS is a logistic model of related socioeconomic variables on receiving aid. 2b is the 2SLS estimation where the FSLS is a poisson model of related socio-economic variables on the total number of aid projects. Lastly, 2c is the 2SLS estimation where the FSLS is a logistic model of related socio-economic variables on the total logistic aid funds allocated.

Table 10.13: 2SLS Estimations for the Effect of Aggregated Aid on Conflict Deaths

	Zero-Inflated Negative Binomial Models			2SLS Zero-Inflated Negative Binomial Model		
	Conflict Deaths					
	(1a)	(1b)	(1c)	(2a)	(2b)	(2c)
Any Project Active? (Y=1, N=0)	0.0573			-0.109		
	(0.58)			(-0.74)		
Total Number of Active Aid Projects		-0.00217			0.000311	
		(-0.69)			(0.01)	
Log Total Active Aid Project Funds			-0.000672			-0.0226
			(-0.09)			(-0.69)
Log District GDP	0.0184	0.0155	0.0242	0.0188	0.0239	0.00927
	(0.20)	(0.17)	(0.27)	(0.21)	(0.26)	(0.10)
District per capita income	-0.0443	-0.213	0.0225	1.039	0.00762	0.827
	(-0.01)	(-0.04)	(0.00)	(0.18)	(0.00)	(0.15)
Log District Development Budget	-0.165*	-0.164*	-0.168*	-0.170*	-0.168*	-0.160*
	(-2.25)	(-2.19)	(-2.26)	(-2.33)	(-2.26)	(-2.10)
Gini	-0.600**	-0.629**	-0.616**	-0.641**	-0.612**	-0.644**
	(-2.62)	(-2.69)	(-2.69)	(-2.72)	(-2.62)	(-2.78)
Constant	4.935***	5.022***	4.993***	5.111***	4.985***	5.142***
	(4.86)	(4.82)	(4.86)	(5.01)	(4.92)	(5.06)
Observations	5796	5796	5796	5796	5796	5796
Districts	69	69	69	69	69	69
AIC	9746.9	9746.3	9747.8	9746.7	9747.8	9746.9
BIC	9806.9	9806.3	9807.8	9806.7	9807.8	9806.9
LL	-4864.5	-4864.1	-4864.9	-4864.4	-4864.9	-4864.5

t statistics in parentheses, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Robust Standard Errors, Poisson with random effects for Columns 1a-1c, Zero-Inflated Negative Binomial for Columns 2a-2c

Robust Standard Errors, Zero-Inflated Negative Binomial Estimations for 1a-1c, 2a-2c are the two stage least squares results using a Zero-Inflated Negative Binomial as found in Table 12. 2a is the 2SLS estimation where the FSLS is a logistic model of related socioeconomic variables on receiving aid. 2b is the 2SLS estimation where the FSLS is a poisson model of related socio-economic variables on the total number of aid projects. Lastly, 2c is the 2SLS estimation where the FSLS is a logistic model of related socio-economic variables on the total logistic aid funds allocated.

Table 10.14: 2SLS Estimations for the Effect of Aggregated Aid on Civilian and Military Deaths

	Zero-Inflated Negative Binomial Models			2SLS Zero-Inflated Negative Binomial Model		
	Conflict Deaths	Military Deaths	Civilian Deaths	Conflict Deaths	Military Deaths	Civilian Deaths
	(1a)	(1b)	(1c)	(2a)	(2b)	(2c)
Any Project Active? (Y=1, N=0)	0.0573	0.00111	-0.0443	-0.109	-0.336	-0.0790
	(0.58)	(0.01)	(-0.36)	(-0.74)	(-1.10)	(-0.44)
Log. District GDP	0.0184	0.212	0.349***	0.0188	0.186	0.343***
	(0.20)	(1.05)	(3.95)	(0.21)	(0.93)	(3.80)
District per capita income	-0.0443	1.317	-3.460	1.039	4.680	-2.752
	(-0.01)	(0.19)	(-0.85)	(0.18)	(0.64)	(-0.60)
Log. District Development Budget	-0.165*	-0.190	-0.125	-0.170*	-0.191	-0.127*
	(-2.25)	(-1.40)	(-1.95)	(-2.33)	(-1.41)	(-2.00)
Gini	-0.600**	-0.728	-0.285	-0.641**	-0.818	-0.298
	(-2.62)	(-1.38)	(-1.09)	(-2.72)	(-1.49)	(-1.13)
Constant	4.935***	1.948	-0.320	5.111***	2.273	-0.243
	(4.86)	(1.04)	(-0.32)	(5.01)	(1.19)	(-0.24)
Observations	5796	5796	5796	5796	5796	5796
Districts	69	69	69	69	69	69
AIC	9746.9	3267.1	4821.0	9746.7	3265.5	4821.0
BIC	9806.9	3327.1	4881.0	9806.7	3325.5	4880.9
LL	-4864.5	-1624.5	-2401.5	-4864.4	-1623.8	-2401.5

t statistics in parentheses, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Robust Standard Errors, Poisson with random effects for Columns 1a-1c, Zero-Inflated Negative Binomial for Columns 2a-2c

Robust Standard Errors, Zero-Inflated Negative Binomial Estimations for 1a-1c, 2a-2c are the two stage least squares results using a Zero-Inflated Negative Binomial as found in Table 13. 2a is the 2SLS estimation where the FSLS is a logistic model of related socioeconomic variables on receiving aid. 2b is the 2SLS estimation where the FSLS is a poisson model of related socio-economic variables on the total number of aid projects. Lastly, 2c is the 2SLS estimation where the FSLS is a logistic model of related socio-economic variables on the total logistic aid funds allocated.

Table 10.15: 2SLS Estimations for the Effect of Aid Sectors on Conflict Events

	Zero-Inflated Negative Binomial Model			2SLS Zero-Inflated Negative Binomial Model		
	Conflict Events					
	(1a)	(1b)	(1c)	(2a)	(2b)	(2c)
Education Project Active ? (Y=1, N=0)	0.103*			-0.00891		
	(2.45)			(-1.70)		
Agriculture Project Active? (Y=1, N=0)	-0.311***			0.0487*		
	(-4.22)			(2.21)		
Water Project Active? (Y=1, N=0)	-0.287***			-0.00939		
	(-4.36)			(-1.41)		
Health Project Active? (Y=1, N=0)	-0.305			-0.0000789		
	(-1.45)			(-0.17)		
General Budget Project Active? (Y=1, N=0)	-0.181***			-0.00291		
	(-3.75)			(-0.18)		
Energy Project Active? (Y=1, N=0)	-0.0695			-0.0911		
	(-1.66)			(-0.26)		
Total Number of Active		0.00391			0.00375***	
Education Projects		(1.51)			(3.73)	
Total Number of Active		-0.298***			0.0812	
Agriculture Projects		(-4.13)			(1.56)	
Total Number of Active		-0.237***			-0.0119	
Water Projects		(-4.21)			(-1.23)	
Total Number of Active		-0.386*			-0.000293	
Health Projects		(-2.17)			(-0.56)	
Total Number of Active		-0.00316*			-0.0410*	
General Budget Projects		(-2.51)			(-2.06)	
Total Number of Active		-0.112***			-0.152	
Energy Projects		(-3.30)			(-0.85)	
Log. Total Education Aid			0.00782*			0.0203
Project Funds			(2.43)			(1.87)
Log. Total Agriculture Aid			-0.0237***			0.101*
Project Funds			(-4.19)			(2.17)
Log. Total Water Aid			-0.0205***			-0.0227
Project Funds			(-4.52)			(-1.67)
Log. Total Health Aid			-0.0210			0.0380
Project Funds			(-1.60)			(0.16)
Log Total General Budget			-0.0130***			-0.0460*
Aid Project Funds			(-3.87)			(-2.14)
Log Total Energy Aid			-0.00726			0.0104
Project Funds			(-1.93)			(0.26)
Constant	-0.261	-0.679	-0.350	0.854	0.465	0.715
	(-0.56)	(-1.28)	(-0.74)	(1.38)	(0.53)	(1.09)
Observations	5796	5796	5796	5796	5796	5796
Districts	69	69	69	69	69	69
AIC	6337.3	6340.0	6334.8	6403.8	6385.2	6399.8
BIC	6430.6	6433.4	6428.1	6497.1	6478.6	6493.1
LL	-3154.6	-3156.0	-3153.4	-3187.9	-3178.6	-3185.9

t statistics in parentheses, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Robust Standard Errors, Poisson with random effects for Columns 1a-1c, Zero-Inflated Negative Binomial for Columns 2a-2c

Robust Standard Errors, Zero-Inflated Negative Binomial Estimations for 1a-1c, 2a-2c are the two stage least squares results using a Zero-Inflated Negative Binomial as found in Table 14. 2a is the 2SLS estimation where the FSLS is a logistic model of related socioeconomic variables on receiving aid. 2b is the 2SLS estimation where the FSLS is a poisson model of related socio-economic variables on the total number of aid projects. Lastly, 2c is the 2SLS estimation where the FSLS is a logistic model of related socio-economic variables on the total logistic aid funds allocated.

Table 10.16: 2SLS Estimations for the Effect of Aid Sectors on Conflict Deaths

	Zero-Inflated Negative Binomial Model			2SLS Zero-Inflated Negative Binomial Model		
	Conflict Deaths					
	(1a)	(1b)	(1c)	(2a)	(2b)	(2c)
Education Project Present? (Y=1, N=0)	0.384**			0.0110		
	(3.03)			(0.76)		
Agriculture Project Present? (Y=1, N=0)	-0.134			-0.0327		
	(-0.79)			(-0.56)		
Water Project Present? (Y=1, N=0)	-0.676**			-0.00913		
	(-3.19)			(-0.59)		
Health Project Present? (Y=1, N=0)	-1.103***			0.00163		
	(-4.89)			(1.24)		
General Budget Project Present? (Y=1, N=0)	-0.296*			-0.00246		
	(-2.19)			(-0.07)		
Energy Project Present? (Y=1, N=0)	-0.0264			-0.636		
	(-0.29)			(-0.63)		
Total Number of Active Education Projects		0.0166			0.00697***	
		(1.86)			(4.17)	
Total Number of Active Agriculture Projects		-0.118			-0.129	
		(-0.66)			(-0.97)	
Total Number of Active Water Projects		-0.468**			0.0156	
		(-3.19)			(0.72)	
Total Number of Active Health Projects		-1.149***			0.00188	
		(-6.30)			(1.25)	
Total Number of Active General Budget Projects		-0.00315			-0.0653	
		(-0.74)			(-1.94)	
Total Number of Active Energy Projects		-0.195*			-0.562	
		(-2.48)			(-0.90)	
Log. Total Education Aid Project Funds			0.0294**			0.0889**
			(2.88)			(2.97)
Log. Total Agriculture Aid Project Funds			-0.0107			-0.0371
			(-0.81)			(-0.31)
Log. Total Water Aid Project Funds			-0.0478***			-0.0200
			(-3.33)			(-0.66)
Log. Total Health Aid Project Funds			-0.0741***			0.620
			(-5.43)			(1.00)
Log. Total General Budget Aid Project Funds			-0.0212*			-0.0967*
			(-2.08)			(-1.98)
Log Total Energy Aid Project Funds			-0.00255			0.00451
			(-0.31)			(0.04)
Constant	3.071**	2.475	2.854*	4.619**	2.837	4.487***
	(2.79)	(1.93)	(2.49)	(3.05)	(1.36)	(3.50)
Observations	5796	5796	5796	5796	5796	5796
Districts	69	69	69	69	69	69
AIC	9645.5	9666.3	9645.1	9748.7	9720.6	9718.3
BIC	9738.8	9759.6	9738.4	9842.0	9813.9	9811.6
LL	-4808.8	-4819.1	-4808.6	-4860.3	-4846.3	-4845.1

t statistics in parentheses, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Robust Standard Errors, Poisson with random effects for Columns 1a-1c, Zero-Inflated Negative Binomial for Columns 2a-2c

Robust Standard Errors, Zero-Inflated Negative Binomial Estimations for 1a-1c, 2a-2c are the two stage least squares results using a Zero-Inflated Negative Binomial as found in Table 15. 2a is the 2SLS estimation where the FSLS is a logistic model of related socioeconomic variables on receiving aid. 2b is the 2SLS estimation where the FSLS is a poisson model of related socio-economic variables on the total number of aid projects. Lastly, 2c is the 2SLS estimation where the FSLS is a logistic model of related socio-economic variables on the total logistic aid funds allocated.

Table 10.17: 2SLS Estimations for the Effect of Aid Sectors on Civilian and Military Deaths

	Zero-Inflated Negative Binomial Model			2SLS Zero-Inflated Negative Binomial Model		
	Conflict Deaths	Military Deaths	Civilian Deaths	Conflict Deaths	Military Deaths	Civilian Deaths
	(1a)	(1b)	(1c)	(2a)	(2b)	(2c)
Education Project Present? (Y=1, N=0)	0.384**	-0.720**	0.119	0.0110	-0.0347	-0.00945
	(3.03)	(-3.21)	(0.86)	(0.76)	(-1.35)	(-0.69)
Agriculture Project Present? (Y=1, N=0)	-0.134	0.606	-0.0713	-0.0327	-0.0489	0.169**
	(-0.79)	(1.72)	(-0.44)	(-0.56)	(-0.38)	(2.61)
Water Project Present? (Y=1, N=0)	-0.676**	-0.573	-0.720***	-0.00913	-0.0408	0.000206
	(-3.19)	(-1.41)	(-4.23)	(-0.59)	(-1.33)	(0.01)
Health Project Present? (Y=1, N=0)	-1.103***	-21.47***	-0.439	0.00163	0.00550*	0.000956
	(-4.89)	(-33.62)	(-1.17)	(1.24)	(2.19)	(0.73)
General Budget Project Present? (Y=1, N=0)	-0.296*	-0.159	-0.0763	-0.00246	-0.0910	-0.0577
	(-2.19)	(-0.62)	(-0.71)	(-0.07)	(-1.63)	(-0.81)
Energy Project Present? (Y=1, N=0)	-0.0264	0.599**	0.0360	-0.636	0.781	0.110
	(-0.29)	(3.10)	(0.40)	(-0.63)	(0.48)	(0.09)
Log. District GDP	-0.0892	0.0925	0.234*	-0.0118	0.0168	0.162
	(-0.97)	(0.50)	(2.31)	(-0.09)	(0.05)	(1.09)
District per capita income	3.325	-2.636	-1.398	3.882	-24.95	-14.70
	(0.63)	(-0.39)	(-0.35)	(0.51)	(-1.93)	(-1.53)
Log. District Development Budget	-0.0177	-0.150	0.00212	-0.145	0.0645	-0.132
	(-0.23)	(-1.06)	(0.03)	(-1.66)	(0.39)	(-1.76)
Gini	-0.760***	-1.067*	-0.480	-0.653*	-1.487**	-0.401
	(-3.41)	(-2.11)	(-1.75)	(-2.51)	(-2.68)	(-1.22)
Constant	3.071**	2.330	-1.731	4.619**	-0.928	2.016
	(2.79)	(1.20)	(-1.76)	(3.05)	(-0.35)	(1.40)
Observations	5796	5796	5796	5796	5796	5796
Districts	69	69	69	69	69	69
AIC	9645.5	3238.8	4805.2	9748.7	3254.6	4811.4
BIC	9738.8	3332.1	4898.5	9842.0	3347.9	4904.7
LL	-4808.8	-1605.4	-2388.6	-4860.3	-1613.3	-2391.7

t statistics in parentheses, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Robust Standard Errors, Poisson with random effects for Columns 1a-1c, Zero-Inflated Negative Binomial for Columns 2a-2c

Robust Standard Errors, Zero-Inflated Negative Binomial Estimations for 1a-1c, 2a-2c are the two stage least squares results using a Zero-Inflated Negative Binomial as found in Table 16. 2a is the 2SLS estimation where the FSLS is a logistic model of related socioeconomic variables on receiving aid. 2b is the 2SLS estimation where the FSLS is a poisson model of related socio-economic variables on the total number of aid projects. Lastly, 2c is the 2SLS estimation where the FSLS is a logistic model of related socio-economic variables on the total logistic aid funds allocated.

Table 10.18: 2SLS Estimations for the Effect of Aid Concentration on Conflict Events

	Zero-Inflated Negative Binomial Model		2SLS Zero-Inflated Negative Binomial Model	
	Conflict Events			
	(1a)	(1b)	(2a)	(2b)
Any Project Present? (Y=1, N=0)	-0.0939*		-0.101	
	(-2.21)		(-1.47)	
High Concentration? (Y=1, N=0)		-0.0981		0.00617
		(-1.29)		(0.14)
Low Concentration? (Y=1, N=0)		0.183***		-0.00483
		(4.42)		(-1.13)
Log. District GDP	0.151***	0.112**	0.142***	0.0983
	(4.02)	(2.87)	(3.76)	(1.73)
District per capita income	-0.745	0.331	0.118	-0.537
	(-0.45)	(0.19)	(0.07)	(-0.32)
Log. District Development Budget	-0.0465	-0.0311	-0.0482	-0.0347
	(-1.44)	(-0.95)	(-1.48)	(-1.04)
Gini	0.0000398	-0.0914	-0.00755	-0.0449
	(0.00)	(-1.14)	(-0.09)	(-0.31)
Constant	0.500	0.393	0.559	0.621
	(1.15)	(0.88)	(1.28)	(1.16)
Observations	5796	5796	5796	5796
Districts	69	69	69	69
AIC	6400.9	6381.9	6404.5	6407.8
BIC	6460.9	6448.6	6464.4	6474.4
LL	-3191.4	-3181.0	-3193.2	-3193.9

t statistics in parentheses

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Robust Standard Errors, Zero-Inflated Negative Binomial Estimations for 1a-1b, 2a-2b are the two stage least squares results using a Zero-Inflated Negative Binomial as found in Table 17. 2a is the 2SLS estimation where the FSLS is a logistic model of related socioeconomic variables on receiving aid. 2b is the 2SLS estimation where the FSLS is a logistic model of related socioeconomic variables on receiving high or low concentrations of aid.

Table 10.19: 2SLS Estimations for the Effect of Aid Concentration on Conflict Deaths

	Zero-Inflated Negative Binomial Model		2SLS Zero-Inflated Negative Binomial Model	
	Conflict Deaths			
	(1a)	(1b)	(2a)	(2b)
Any Project Present? (Y=1, N=0)	0.0573		-0.109	
	(0.58)		(-0.74)	
High Concentration? (Y=1, N=0)		-0.213		-0.00690
		(-0.80)		(-0.08)
Low Concentration? (Y=1, N=0)		0.136		-0.00249
		(1.14)		(-0.26)
Log. District GDP	0.0184	-0.00762	0.0188	0.00251
	(0.20)	(-0.08)	(0.21)	(0.02)
District per capita income	-0.0443	1.699	1.039	0.194
	(-0.01)	(0.31)	(0.18)	(0.04)
Log. District Development Budget	-0.165*	-0.162*	-0.170*	-0.161*
	(-2.25)	(-2.16)	(-2.33)	(-2.03)
Gini	-0.600**	-0.723**	-0.641**	-0.618
	(-2.62)	(-3.06)	(-2.72)	(-1.88)
Constant	4.935***	5.097***	5.111***	5.018***
	(4.86)	(4.67)	(5.01)	(4.16)
Observations	5796	5796	5796	5796
AIC	9746.9	9739.8	9746.7	9749.7
BIC	9806.9	9806.5	9806.7	9816.3
LL	-4864.5	-4859.9	-4864.4	-4864.8

t statistics in parentheses
* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Robust Standard Errors, Zero-Inflated Negative Binomial Estimations for 1a-1b, 2a-2b are the two stage least squares results using a Zero-Inflated Negative Binomial as found in Table 18. 2a is the 2SLS estimation where the FSLS is a logistic model of related socioeconomic variables on receiving aid. 2b is the 2SLS estimation where the FSLS is a logistic model of related socioeconomic variables on receiving high or low concentrations of aid.

Table 10.20: 2SLS Estimations for the Effect of Aid Concentration on Civilian and Military Deaths

	Zero-Inflated Negative Binomial Model		2SLS Zero-Inflated Negative Binomial Model	
	Military Deaths (1a)	Civilian Deaths (1b)	Military Deaths (2a)	Civilian Deaths (2b)
High Concentration (Y=1, N=0)	0.291	-1.320*	-0.0190	-0.0266*
	(0.34)	(-2.43)	(-0.84)	(-2.00)
Low Concentration (Y=1, N=0)	0.416	-0.0897	0.304	0.0433
	(1.49)	(-0.46)	(1.76)	(0.46)
Log. District GDP	0.463	0.396*	-0.0862	0.0734
	(0.98)	(2.07)	(-0.26)	(0.43)
District per capita income	-3.719	-1.780	2.584	-1.346
	(-0.47)	(-0.42)	(0.37)	(-0.32)
Log. District Development Budget	-0.288	-0.190	-0.158	-0.0584
	(-1.10)	(-1.33)	(-1.05)	(-0.86)
Gini	-1.017	-0.606	-1.554*	-0.585
	(-1.46)	(-1.00)	(-2.09)	(-1.42)
Constant	0.539	-0.331	3.936	0.533
	(0.25)	(-0.16)	(1.70)	(0.41)
Observations	5796	5796	5796	5796
Districts	69	69	69	69
AIC	8920.3	8785.2	3264.5	4813.7
BIC	8973.6	8838.5	3331.1	4880.4
LL	-4452.1	-4384.6	-1622.2	-2396.9

t statistics in parentheses

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Robust Standard Errors, Poisson with random effects for Columns 1a-1c, Zero-Inflated Negative Binomial for Columns 2a-2c

Robust Standard Errors, Zero-Inflated Negative Binomial Estimations for 1a-1b, 2a-2b are the two stage least squares results using a Zero-Inflated Negative Binomial as found in Table 19. 2a is the 2SLS estimation where the FSLS is a logistic model of related socioeconomic variables on receiving aid. 2b is the 2SLS estimation where the FSLS is a logistic model of related socioeconomic variables on receiving high or low concentrations of aid.

CHAPTER 11

APPENDIX 2: LIST OF VARIABLES

- Conflict Data
  - Conflict Events
  - Conflict Deaths
  - Military Deaths
  - Civilian Deaths
- Development Data
  - Aggregated Aid
    * Aggregated Aid Dummy
    * Number of Aggregated Total Aid Projects
    * Money
  - Education Aid
    * Education Aid Dummy
    * Number of Education Aid Projects
    * Money Education
  - Agriculture Aid
    * Agriculture Aid Dummy
    * Number of Agriculture Aid Projects
    * Agriculture Money
  - Water and Sanitation Aid
    * Water and Sanitation Aid Dummy

        - Number of Water and Sanitation Aid Projects
        - Water and Sanitation Money
    - Health Aid
        - Health Aid Dummy
        - Number of Health Aid Projects
        - Health Money
    - General Budget Aid
        - General Budget Aid Dummy
        - Number of General Budget Aid Projects
        - General Budget Money
    - Energy Aid
        - Energy Aid Dummy
        - Number of Energy Aid Projects
        - Energy Aid Money
- Socio-Economic Data
    - 2001 Population
    - Log District-level GDP (in million Nepalese Rupees)
    - District-level per capita GDP (in million Nepalese Rupees)
    - District Share of the Total Regular Budget Expenditures (%)
    - District Share of the Total Development Budget Expenditures (%)
    - Log. District Development Budget Expenditure
    - Share of households whose head is female (%)

- Share of households whose head is married (%)
- Share of households whose head has an elementary school education (%)
- Share of households whose head has a secondary school education (%)
- Share of households whose head is a civil servant (%)
- Share of households who own their home (%)
- Share of households who are employed (%)
- Share of households whose major source of income is wages (%)
- Share of households whose major source of income is through agriculture-based activities (%)
- District-level contraceptive rate: Number of fertile couples using a contraceptive method per 100 married women of reproductive age
- Gini Index: Capturing the average size of operational land holding and inequality in the distribution of the land holding
- Share of district that is Chettry (%)
- Share of district that is Brahmin (%)
- Share of households who own a car (%)
- Share of households who own a telephone (%)
- Share of households who own a bicycle (%)
- Share of households who own a motorcycle (%)

• Month Time Period Dummies

Appendix 3: T-tests of Socioeconomic Characteristics on Aid Treatment

Table 11.1: T-test P-values of Socioeconomic Characteristics of Receiving and Not-Receiving Different Aid Projects

	Education	Agriculture	Health	Water	General Budget	All Projects	Energy
Share of households whose head is female (%)	FTR	FTR	FTR	0.0914	FTR	FTR	0.072
Share of households whose head is married	FTR	FTR	FTR	0.0288	0.0427	0.0647	0.0293
Share of households whose head has an elementary school education	0.0395	FTR	FTR	FTR	FTR	FTR	FTR
Share of households whose head has a secondary school education (%)	0.028	FTR	FTR	FTR	0.0042	0.0042	0.0875
Share of households who are employed (%)	FTR	FTR	0.1643	FTR	FTR	FTR	FTR
Share of households whose head is a civil servant (%)	0.0711	FTR	FTR	FTR	FTR	FTR	FTR
Share of households who own their home (%)	FTR	FTR	FTR	0.1497	0.0002	0.0014	FTR
Share of households whose major source of income is wages (%)	FTR	0.0172	FTR	0.0299	FTR	0.2884	0.193
Share of households whose major source of income is through agriculture-based activities (%)	FTR	0.005	FTR	0.0164	FTR	FTR	FTR
District-level contraceptive rate	0.0028	FTR	FTR	0.0393	0	0	FTR
Share of households who own a car (%)	0.0997	FTR	FTR	FTR	0.0164	0.0164	FTR
Share of households who own a telephone (%)	0.139	FTR	0.1283	FTR	0.0029	0.005	FTR
Share of households who own a bicycle (%)	FTR	0.0002	FTR	0.0201	FTR	FTR	0.0881
Share of households who own a motorcycle (%)	0.1595	0.1393	FTR	FTR	0.0264	0.0312	FTR
Share of district that is Brahmin (%)	FTR	0.0833	FTR	FTR	0.182	0.1378	FTR
Share of district that is Chettry (%)	0.785	FTR	FTR	0.0008	0.04	0.0255	0.0335
District Share of the Total Regular Budget Expenditures (%)	FTR	FTR	FTR	0.1953	FTR	FTR	FTR
District Share of the Total Development Budget Expenditures (%)	FTR	FTR	FTR	0.2033	FTR	0.2069	FTR
Gini	FTR	FTR	FTR	0.0213	FTR	FTR	FTR
Log. District GDP	FTR	0.0061	FTR	0.0102	0.0096	0.0131	FTR
District-level per capita income	0.157	FTR	FTR	FTR	0.0309	0.0509	FTR
Log. District Development Budget	FTR	0.0069	FTR	FTR	0.0494	0.0325	0.1716

Above are the p-values of comparing districts that did receive projects and those that did not receive particular projects. FTR indicates that the p-value is greater than .2 and was not used in the First-Stage least squares specification.

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